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POST-OPERATIVE ELECTROLYTE IMBALANCE: Current Management. Surgical Considerations

By

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GENERAL surgical trauma plus general anesthesia as well as certain psychogenic-physiologic factors, plus neuroendocrine reactions, produce several metabolic changes in human beings, which have direct, immediate or slightly delayed repercussion on the patients. The post-operative hyperpyrexia syndrome, increased urinary nitrogen, decreased urinary sodium, physiological oliguria, and paralytic ileus, constitute as many post-operative changes. Post operatively, there is also a certain degree of hypoglycemia, and a decrease in magnesium probably due to elevation of plasma phosphate and an increase in protein bound iodine.

Twenty-four to 35 hours postoperatively, there is an increased production of urinary steroids and pituitary anti-diuretic hormone with a decrease in circulating eosinophils. There is diminution in hematocrit and osmotic pressure of plasma protein due to intercellular shift of water and ions and the body retention of parenteral administrative fluid. There is a reduction in concentration of sodium and chlorides and an increased concentration of potassium in the liver and sweat. Those alterations of the physiological and the neuroendocrine control of water and electrolyte are reflected in the volume and in the chemical electrolytic composition of all the fluid of the organism. There is some sort of a physiologic post-operative hypochloremia, hyponatremia, and less common hypokalemia.

Actually, there is a total extracellular sodium and chloride retention which can be calculated by the sum of the plasma water concentration and extra-cellular fluid volume, as constituting the total extra-cellular electrolyte.

Forty-eight to 72 hours postoperatively, the normalization of the extended extra-cellular fluid will be noted by a marked polyuria and urinary excretion of sodium and chloride.

The surgeon should respect this physiological response to the surgical act because this is somewhat of a temporary self-limited physiological process, unless, of course, the pre-operative pathological status of the patient directs the surgeon to a stronger course of operative therapeutics. In a patient who has been markedly preoperatively dehydrated, due, for instance, to long standing gastrointestinal obstruction, the physiological response to the surgical act is less visible because the pathological process incited the organism for defense or because the response, to stress, is partially exhausted or somewhat attenuated or overlooked.

If, post-operatively, intravenous administration of fluid exceeds the physiological limits, this excess of fluid is not excreted early in the postoperative period because of the anti-diuresis hormonal process and increased secretion of adrenal cortical activity. The hyponatremic status increases the adreno-cortical release of aldosterone which in turn in-

creases the renal sodium conservation. This postoperative expansion of the extra-cellular fluid is partially localized at the site of the major operative procedure; for instance, a gastrojejunostomy stoma, amputated stump, or craniotomy flap. This expansion is due to decreased osmolality of the traumatized area, secondary to tissue catabolism.

We are going to examine only some aspects of the post-operative electrolytic imbalance. Post-operative hyperkalemia might be due to a shift of potassium ion from the intra-cellular compartment as a result of the increase in cellular catabolism and anoxic process affecting the cells; or it can be due to the intravenous or per-oral administration of potassium chloride in a postoperative patient with oliguria. Hyperkalemia also occurs in a hypotensive state following shock, dehydration, congestive heart failure and after a transfusion of stored blood which contains large amounts of potassium released from hemolyzed red blood cells. The hyperkalemic status is characterized clinically by intermittent episodes of mental confusion, listlessness, tingling of extremities, bradycardia, and irregular cardiac rhythm leading to cardiac arrest if serum potassium level is above 10 milliequivalents per liter. However, cases have been reported where the patient survived a blood serum level of 12 milliequivalents per liter. There is electrocardiographical evidence: peaked T waves, increased duration of QRS pattern, increased PR interval leading to auricular standstill, alternating with a progressive delay in ventricular conduction, total arrhythmia leading to cardiac arrest and diastole.

More frequent is the hypokalemic state; it is always accompanied by a disturbance of water and sodium chloride pattern. The main etiological factor is postoperative, uncontrolled gastric decompression suction; for instance, in the relief of intestinal obstruction, marked vomiting, diarrhea, and a tenacious pancreatic-biliary fistula. Gastric secretion might contain up to 30 to 40 milliequivalents per liter; intestinal secretion about 8 to 10 milliequivalents per liter. In marked diarrhea

or vomiting, potassium might be lost in the amount of 100 to 200 milliequivalents per day. For every gram of nitrogen which is broken down, 2.5 grams of potassium are released. In a patient with an inoperable carcinoma, the toxemia and the catabolic effect will increase the amount of extracellular potassium having as an etiological factor the destruction of cells.

Other factors leading to a hypokalemic state are the preoperative administration of diuretics, acidosis, the administration of desoxycorticosterone acetate, ACTH and cortisone, and certain cases of potassium losing nephritis. One must also remember that administration of 5% dextrose solution in normal saline without potassium will result in displacement of potassium from its intracellular position. Stress and increased pituitary adrenal cortical activity in the first postoperative 48 hours might bring a hyperkalemia of 9 to 150 milliequivalents per liter. Loss of potassium occurs from muscle, liver and possible central nervous system. The loss of intra-cellular potassium is replaced by sodium, leading to increased output of urinary chlorides and hypokalemic alkalosis. Osmotically, this may be a satisfactory mechanism, if not for the fact that both ions although electro-positively charged have a pharmacological action absolutely and totally different.

The change in the ratio of intracellular and extracellular potassium might impair the intracellular function and have a marked influence on normal muscular contraction like the myocardium, obviously evident by serial electrocardiograms. The hypokalemic state manifests itself by muscle atony, flaccid paralysis, dysphagia, dyspnea, and paralytic ileus. The electrocardiogram shows a prolonged QT interval, depression of ST segment and inverted T and P waves, extrasystoles leading to auricular ventricular block in systole.

The acute postoperative adrenal insufficiency due to partial or total adrenalectomy, or to secondary metastasis to the adrenal glands, is characterized by hyperpyrexia tachycardia, hypotension, vomiting, confu-

sion, listlessness. There is a decrease in the extracellular sodium, due to inability of the renal tissue, as well as the salivary glands and the mucosa of the intestinal tract, to retain the cation-sodium. One should be aware of the adrenal cortical insufficiency due to sudden withdrawal of cortisone. The diagnosis is made by a physician who has a good understanding of the pathophysiology of the adrenal gland and who suspects it or thinks of it as a possible potential post-operative complication. The adrenal cortical insufficiency is characterized by marked hypoglycemia and diminution of muscular tonus, decreased urinary output of cortical steroids and 17-ketosteroids, and absence of eosinophil responses. The deficiency of cortisone or hydroxy-cortisone, especially the 11-17 oxy-steroid type, will produce episodes of unconsciousness, apprehension, lethargy and a marked diurnal transpiration. These phenomena are due to disturbance in the carbohydrate metabolism. There is a decline in gluconeogenesis and conversion of protein to carbohydrate. The adrenal cortex inhibits enzyme reaction concerned with tissue glucose utilization; also, there is disturbance of lipid and protein metabolism. These patients are sensitive to the action of insulin because of the absence of the adrenal cortical insulin antagonist and, therefore, they present an intermittent hypoglycemic status. Deficiency in androgens will affect the protein metabolism because these hormones counter-balance the anti-anabolic effect of the hydrocarbons, and, therefore, prevent depletion of body protein.

The effects of post-operative aldosteronism on the post-operative electrolytic imbalance has been demonstrated since 1954. The increase of blood level of aldosterone will produce a hypernatremic and hyperkaluric condition. Aldosterone seems to be secreted by the zona glomerulosa of the adrenal gland; only the electrolytic balance is affected by this hormone, it does not affect the nitrogen or glucose metabolism. The secretion of glucocorticoids seems to be regulated by ACTH while aldosterone is in a certain degree independent of ACTH. At the beginning there is

no clinical evidence of hypokalemia due to the mechanism of the "intracellular Na^+ Shift." The intra-cellular K^+ is moving out of the cells, being replaced by Na^+ which "shifts" intra-cellularly, constituting, therefore, a malleable compensatory biochemical process in order to maintain the physiological plasma osmolarity.

An increasing loss of intra-cellular potassium is incompatible with life. Should such a process occur, clinical symptoms of hypokalemia become evident and unless emergency action is taken a fatal issue may occur. One must always recall that the plasma potassium level is only a fraction of the total body potassium and a normal patient who weighs 70 kg. has a total amount of body potassium approximating 3500 MEql; or 1.4% is in the extra-cellular space, averaging 4-5 MEql./L. The remainder is distributed in the non-extra-cellular space-like tissue and red blood cells, glycogen, store, bone, etc.

The post-operative hyponatremic condition is due to a post traumatic dilutional process, post commissurotomy hyponatremic status, chronic or acute adrenal cortical failure, to patients on a sodium-free diet, or to the intravenous administration of salt-free solution and strong diuretics therapy, especially mercurials. These patients present an apathetic attitude with an unexplainable lassitude, vomiting and cramps, no thirst, with orthostatic syncope; there is a diminution of blood pressure, plasma volume, no chlorides are excreted in the urine; urine volume is preserved until late. More often there is a mixed water and salt depletion having as an etiological factor vomiting, biliary pancreatic fistula, hyperpyrexia, diarrhea; or as in a post-operative gastrectomy case where the patient is still on gastric suction but he has been given inadvertently excess water by mouth.

In hypernatremia the most common etiological factor is water deficit, shock, or frontal lobe tumor. Dehydration results in thirst, no vomiting, or cramps. The blood pressure and plasma volume are well preserved at the beginning; the urine volume is reduced; sodium and chloride are present in the urine.

On the contrary, loss of water and salt results in a marked impairment of circulatory efficiency with subsequent peripheral circulatory collapse; in this case per oral or parenteral administration of water will not have a diuretic effect unless sodium chloride is added.

Post-operative electrolytic imbalance due to congestive heart failure is one of the most difficult problems to treat. The physiologic-pathologic process of the myocardium response to blood volume increase follows the old well known law, so called Starling's Law, or the Law of the Heart. The observation that within physiological limits a larger diastolic cardiac volume results in a greater energy of contraction and a greater amount of chemical change at each contraction, has been termed the Law of the Heart. It is the fundamental principle governing the adaptability of the heart to compensate with increase venous inflow of blood to the heart, or an increase resistance to the outflow; its validity in the presence of an intact circulation has been questioned. This means that within certain limits increases in venous pressure, or more exactly increases in intra-cardiac pressure, are accompanied by increase in cardiac output. When the upper limit of this relationship reaches the maximum potential, the movement of blood to the heart will fall, a corresponding expansion of plasma volume via renal mechanism will occur. There will be an increase in venous pressure, increase of capillary transudation, distention of the jugular veins, and the interference of returning of the transudate to the general circulation will produce pitting edema of the superior and inferior extremities and subjective and objective finds of hydrothorax, hydropericardium and ascites. In case of intake Na^+ in excess to the potential glomerular filtration, there will be a Na^+ , plus water retention due to the osmo-receptor anti-diuretic system which regulates the solute-solvent relationship. There will be an expansion of the extracellular fluid compartment; the extracellular fluid concentration of Na is within physiological limits or slightly elevated.

Patients with congestive heart failure show a tendency to hypochloremic metabolic alkalosis plus a high concentration of bicarbonate. This is possibly due to the fact that those patients excrete equal amounts of Na and Cl , whereas in the body Na concentration exceeds the Cl or could very well be attributed to a CO_2 retention as a consequence of cardio-pulmonary pathology with secondary renal repercussion.

There are several cases where in congestive heart failure hyponatremia occurs with or without Na^+ depletion: the retention of Na^+ is accompanied by retention of water. Therefore, in most cases of untreated congestive failure, serum Na^+ and Cl^- levels are not different from those seen in healthy individuals; however, in severe congestive heart failure the serum Na^+ and water become lowered.

This may be due to salt depletion following strong mercurial diuretic treatment or exchange resins, low sodium diet, etc. However, that this is not salt depletion is evident since intravenous administration of hypertonic saline does not materially improve the patient's pathological status. There is, however, generalized increased hypotonicity, aggravation of edema, and transient increase in plasma concentration of Na , sometimes associated with thirst. Just how the hypotonicity occurs is not well understood. There is a possibility that prolonged congestive heart failure somehow impairs the intracellular osmotically active electrolyte with subsequent hypotonicity or adaptation of the osmoreceptor renal response mechanism to a new low level, with the result that it cannot decrease the expended salt and water store nor raise the concentration to physiological values; this type of hyponatremia is usually a fatal issue.

Another clinical form of hyponatremia in congestive heart failure is that associated with true sodium depletion; even if edema persists it is difficult to distinguish from the first kind of hyponatremia; only the intravenous administration of hypertonic NaCl solution will differentiate it. Physiological elevated level of Na does, therefore, not exclude the pres-

ence of a low salt syndrome. The K^+ deficit in post-operative congestive heart failure might be due to inadequate consumption of potassium in the face of a continued loss and in the fact that such a patient is almost always on a forced mercurial diuresis, therapeutic or carbonic anhydrase inhibitors, or digitalis—all drugs which have the result of producing a hyperkotasuria. To counterbalance those pathological changes is to remove the etiological factor of the congestive heart failure, which is a myocardial debility, potential or absolute; this emergency therapy will have the immediate effect of regulating the post-operative defective homeostatic process and of regulating the volume of water and electrolyte in the body. In patients who develop hypochloremic alkalosis with refractiveness to normal diuretic treatment, NH_4Cl intravenous should be given, because restoration of the physiological level of Cl permits the mercurial ion to serve as a natriuretic agent. The most difficult cases are instances when a post-operative patient develops intractable edema with hyponatremia not attributable to Na depletion. In this case intravenous administration of hypertonic saline and K might sometimes lead to diuresis.

The intravenous administration of large amounts of sodium citrate is another etiological factor in post-operative electrolytic imbalance. Sodium citrate causes a hypertensive syndrome followed by hypocalcemia, and later a hypotensive condition with diminution of minute volume or even cardiac arrest. Imbalance occurs from citric acid intoxication during multiple transfusions of citrated blood in patients with hepatic insufficiency, or with mechanical obstruction to hepatic circulation, or in any patient without hepatic pathology in extremely rapid or prolonged transfusion. Induced hypothermia probably compounds the danger through depression of all metabolic processes. There is hyperpnea, sialorrhea and a diminution of blood coagulation; the hypocalcemic effect is due to lack of ionized calcium which becomes bound to excessive citrate ion. The phosphorus is slightly lower during the hypocal-

cemic state and rises fast during calcium recovery. The recovery is attributed to mobilization of bone calcium and phosphorus, apparently by mediation of the parathyroid hormone. During rapid injection of stored citrated blood in a normal man, the plasma citrate concentrate rises to 1 or 1.5 milliequivalent per liter. In a patient with hepatic disfunction, it rises between 3 and 3.5 milliequivalents per liter; in a patient in shock to 7 or 7.5 milliequivalents per liter; more than necessary to bind all available ionized calcium. The intravenous administration of calcium makes the citrate effect appear; since the ratio of blood to diluent is 3 to 1 in a 2,000 cc. blood transfusion there will be 500 cc. of diluent, that is 8.5 grams of sodium citrate. Therefore, a restriction on administration of blood should be made, and blood should be administered at a slow rate in order to avoid pulmonary edema in a patient with chronic anemia complicated by cardio-renal pathology.

PRACTICAL SURGICAL THERAPEUTICS SUGGESTIONS

Further comments: Unless the patient was on pre-operative gastro-intestinal decompression and lost a lot of sodium and potassium, one should not overload the patient post-operatively with saline solution; just as we mentioned above, this practice may throw a patient into pulmonary edema, produce edema of the gastro-intestinal anastomosis and post-operative obstructive symptoms.

In the correction of fluid and electrolytic imbalance due to unusual loss of gastro-intestinal secretions, the patient not presenting obstructive symptoms, glaucoma, or spasm of cardiac sphincter, the intravenous administration of methanteline bromide (Banthine) or Propantheline bromide (Pro-Banthine) is very helpful; these possess muscarinic and nicotinic blocking pharmacological action. These parasympatholytic drugs possess not only the blocking action on the autonomic ganglia of anticholinergic agents but also have an atropine-like pharmacological action on the parasympathetic post-ganglionic nerve

endings, increasing, therefore, its pharmacological action on the parasympathetic division of the autonomic system; and, therefore, diminishing the gastro-intestinal colonic motility; they have an antispasmodic action on the pylorus and sphincter of Oddi, reduces the volume secretion of the pancreatic gland. Too, after parenteral administration an acidity occurs more frequently; these drugs have little effect on the cephalic phase of acid secretion.

Should the patient present a transfusion reaction, an immediate intravenous infusion of Dextrose 5% in DW + 250 mgm. of sodium bicarbonate, plus 25 mgm. of Tripelenamine, or 50 mgm. of Diphenhydramine. In the oliguric phase an absolute fluid restriction should be envisaged; the amount of fluid administered to the patient should be the sum of urinary output whatever it may be, plus the insensible loss (500 cc.) and fluid loss by gastric decompression or intestinal fistula. If the patient is able to tolerate fluids by mouth this is the preferable way of administering fluid; otherwise parenteral fluid should be administered at a very slow drip with the firm idea in mind that overhydration may throw the patient in an irreversible cardiac decompensation—pulmonary oedema-status. Should this misfortune happen, the surgeon should immediately withdraw 350-450 cc. of blood; sometimes the patient recovers. Electrolyte balance studies (CO_2 , Cl, K, Na, Ca) are a must and should be done every 48 hours, this includes blood urea nitrogen and creatinine, of course. The blood urea nitrogen level, usually but not always, parallel that of creatinine. In case of acidosis, $\frac{1}{6}$ molar sodium lactate solution should be given intravenously.

For the acidotic state due to renal disfunction one may use sodium bicarbonate or sodium lactate solution. The amount of a $\frac{1}{6}$ molar lactate solution required to raise the plasma CO_2 to 1 Meqvl. per/l. is 4.2 cc. per Kg. of body weight. If one decides to give sodium bicarbonate, it should be given in 1.5% solution and a recheck should be made of the CO_2 plasma level before continuing further alkalization. The cardiotoxicity due to hyperkalemic condition may be diminished

by peroral or rectal administration of cation exchange resins. This results in an intracellular movement of potassium and phosphate as both ions are incorporated in the hepatic glycogen carbohydrate complex, therefore, lowering the potassium level.

The toxic effects of potassium are enhanced by a hypocalcemic and/or hyponatremic condition; the hypocalcemic condition may have as an etiological factor, retention of inorganic phosphate in an anuric patient. A sodium infusion may produce a hypokalemic state and modify the electrocardiogram effect of potassium deficiency even when there is no laboratory evidence of hypokalemia. Also, a patient who is getting digitalis every day and is on a strong diuretic therapeutics may lead to digitalis toxicity through large amounts of potassium loss; cardiac arrhythmia in a digitalized patient should warrant a possibility of potassium deficit; extrasystoles and other electrocardiographic effects are enhanced by intracellular low potassium especially if the patient vomits, or is on parenteral administration of desoxycorticosterone and insulin; there may not be clinical evidence of a low potassium serum level.

Another post-operative electrolytic disturbance which we do not have much experience with is the post-comissurotomy hyponatremic syndrome. It occurs in the early post-operative period, is frequently transient, and is characterized by a decreased plasma osmolarity, hyponatremia, hypochloremia, and hypokalemia and a concentrated urine of low volume. The etiological factor may be the anti-diuretic humeral process leading to dilutional hyponatremia, or oliguria produced by positive pressure breathing and the diuresis occurring during negative pressure breathing. This could affect the stretch receptors in the auricles and great veins within the thoracic cavity; reduction of pressure in the left ventricle by volvulotomy, could explain why the hyponatremic status is more pronounced than after non-cardiac surgery. There is evidence that the antidiuretic response is sensitive to the volume as well as osmolar stimuli. It seems that the volume receptors for posterior

pituitary antidiuresis are located in the region of the left atrium or pulmonary veins. The intravenous administration of 20-50 milliliters of absolute alcohol (in 5% Dextrose solution in the first 72 hours post-operatively) seems to inhibit the anti-diuretic humoral mechanism in patients developing the hyponatremic post-valvulotomy syndrome. Plasma osmolarity returns to normal and there is a marked urinary excretion of sodium, the plasma potassium concentration returns to normal without, however, the urine potassium output returning to pre-operative level.

Post-operative reabsorptive hyperchloremic acidosis following ureterosigmoidostomy is due to excessive reabsorption of urinary chlorides from the colon; following the early post-operative period the glomerular filtration compensates satisfactorily to the sudden hyperchloremic state. However, subsequently renal impairment becomes evident due to chronic ascending infection and a metabolic acidotic state develops. This is because the urine being ordinarily acid in reaction with large quantities of ammonium chloride, supplies this anion and other acid radicals (SO_4 , HPO_4) in excess of base for reabsorption from the colonic mucosa; the reabsorptive capacity being directly proportioned to the surface area of the colonic mucosa. Here there is a marked hyperchloremic state, low CO_2 combining power (below 18 Meqvl./l.) and nitrogen retention; uremia and acidosis occur due to absorption of chloride and urea or am-

monia by the rectosigmoid mucosa. Colonic urine is alkaline in contrast to normal acid urine of the bladder. It can be rectified by administration of sodium bicarbonate, a continuous two-way colonic irrigation, or unilateral nephrostomy. However, a conversion anastomosis can be tried, by doing a segmental terminolateral uretero-ileostomy (ileal bladder). The isolated ileal segment, being under its own peristaltic movements, evacuates promptly and does not serve as a urinary reservoir. Being isolated from the fecal stream, the incidence of retrograde ureteropyelo-renal infections and hyperchloremic acidosis is of no clinical surgical significance.

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Maintenance and Implementation of Standards Required in the Operation of a Safe Blood Transfusion Service*

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(With five illustrations)

"It takes all the running you can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that!"

HOW TRUE the above words ring in today's busy blood banks, especially with our constant efforts to maintain high standards and insure safe blood for patients.

THE PROBLEM

During "hard running" periods it seems that there is simply no time for formal training and implementation of recommended standards. An organization does not operate successfully at a never-changing pace. It must either advance to improve itself or slowly deteriorate.

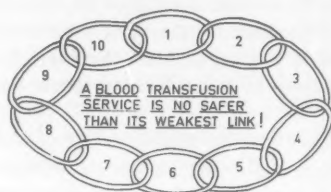
A RECOMMENDED SOLUTION

Guidelines for blood banks and hospital transfusion services are readily available today to provide answers to the numerous technical questions relating to the supply of safe blood. However, these sources do not offer a solution to the problem. A recommended solution, the necessity of maintaining and of implementing minimum standards, is presented in this article.

Figure 1 provides a simple check list to aid in the continuous search for the weakening of a link in a chain where all links are vital. A detailed discussion of each phase of blood banking represented by these ten links is provided in a recent document.²

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LEGEND

1. ALERT, WELL TRAINED AND CONSCIENTIOUS TECHNICIANS
2. DONOR SELECTION AND COLLECTION OF BLOOD
3. IDENTIFICATION OF DONOR BLOOD

4. STORAGE
5. TRANSPORTATION
6. COLLECTION OF BLOOD FROM RECIPIENT
7. IDENTIFICATION OF RECIPIENT BLOOD
8. COMPATIBILITY TESTS
9. ADMINISTRATION OF BLOOD
10. TRANSFUSION SERVICE RECORDS



WHERE IS THE WEAK LINK?

Muro—26th Med. Det.

FIG. 1. Blood Transfusion Chain of Events.

TEN SAFETY LINKS

The core of any hospital's blood bank is a technologist trained in blood bank techniques, capable of carrying out the more complicated procedures in this field and competent to instruct and direct other technical personnel. With this nucleus, blood bank personnel can be expanded as the volume and need require. Additional technical personnel must possess two qualities regardless of background or training: First, these employees must have the willingness and ability to use prescribed technics without varying or altering them; second, they must have the moral integrity to report any untoward result in their work.³

The second link requires that a thorough examination of the donor be made to insure that the donation will not be harmful to him or to the prospective patient by transmission of disease agents. Recommended procedures concerning the various steps from blood collection to transfusion are readily available.⁴

Collection of blood must be carried out by trained personnel, using sterile technic, with modern donor sets (disposable) and either glass or plastic, pyrogen-free blood containers.

Link number three brings to light the importance of proper and consistent labeling. The danger of clerical errors arises when deviation from prescribed methods occurs. Figure 2 depicts various safe and unsafe areas that can exist when recommended blood bank standards are not strictly adhered to. This safety scale also serves as a blood bank inspection list and can be hung in the laboratory or displayed on the work bench under glass.

The fourth link requires that blood be stored at 4°C to 10°C with 6°C as the optimum temperature. A reliable refrigerator is needed and a record of the thermometer readings shall be maintained. A clip board hanging near the refrigerator is handy for recording daily inspection results. Reagents are best stored in an alternate refrigerator to eliminate excessive door-opening of the blood storage refrigerator.

Figure 3 shows a technician recording results of sterility tests which the standards document² recommends be performed not less than once monthly.

Transportation of blood, link number five, is a problem especially in the Armed Forces where long distances and unpredictable, difficult conditions are often involved. Icing with

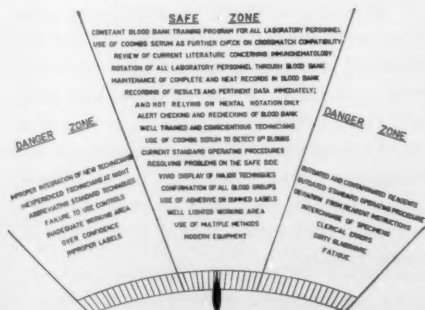


FIG. 2. Blood Bank Safety Scale.



U. S. Army Photo

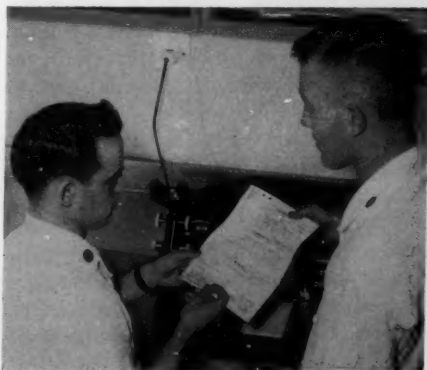
FIG. 3. Sterility Tests. A means of quality control.

"wet ice" requires individual attention and specifically a courier to attend the blood temperature requirements and to prevent untrained personnel from using "dry ice" as a substitute.

Link number six represents an important area in mix-ups. The standards document² is definite in its recommendations concerning collection of blood from recipient:

1. Request Forms:

Forms requesting blood samples from the recipient shall include the full name, hospital number, ward, sex, service and amount of blood desired. A history of previous trans-



U. S. Army Photo

FIG. 4. Reconfirmation of identifying information on labeled tube of blood and Standard Form 518 (Blood Transfusion) by a qualified technician in the Blood Bank.

fusion and pregnancies should be obtained. *Incompleted forms shall not be accepted by the blood transfusion service.*

2. Labeling of samples:

Blood samples shall be obtained in stoppered tubes which are identified with a firmly attached label bearing the recipient's full name, hospital number and date. The label shall be attached to the tube before leaving the bedside and this tube, with the request slip, shall be sent to the blood bank. *There shall be positive identification of recipient.*

Identification of Recipient Blood, link number seven, is illustrated in Figure 4. On the request form and the labeled specimen the identifying information shall be *reconfirmed by a qualified technician in the blood bank* before the sample is used for blood grouping and compatibility tests. *In case of discrepancy or doubt another specimen shall be obtained.*

Compatibility tests are represented by link number eight, Figure 1. For the major cross-match at least two methods are recommended by the standards document,² one to demonstrate optimally the presence of serum or saline active antibodies, and another to detect the presence of incomplete (blocking) antibodies.

Compatibility tests shall be performed before administering all transfusions to the newborn. Since the antibodies present in the infant's serum are derived from the mother, it is preferable, if possible, to perform the crossmatch with the mother's serum and the donor's cells.

Link number nine implies that mistaken identity of the recipient is the most frequent cause of hemolytic reactions. Special precaution for identification of the patient and blood prepared for him shall be taken whenever he is anesthetized or unconscious.

Link number ten represents one of the most effective means of implementing standards and quality control. The essential records recommended by the standards document² are:

- a. Donor records, including donor reactions.

- b. Transfusion request records.
- c. Transfusion release records.
- d. Record of transfusion.
- e. Transfusion reaction records.
- f. Record of bacteriological studies.
- g. Record of refrigeration temperatures.
- h. Record of blood inspection.
- i. Record of blood received from outside source.
- j. Laboratory work records.

These records should be properly maintained.

MAINTENANCE

Maintenance is enhanced by encouraging technicians and administrative personnel to think about ways to improve their section. An example of this is the designing of wall charts like Figure 2. An *active not tranquil* suggestion program is another indication of personnel interest in the over-all operation and especially in the *problems of continuity* that crop up unexpectedly from time to time.⁵

IMPLEMENTATION

Actually implementation is not difficult. Changes can be instituted rather readily, but the follow-up daily inspection is the difficult phase—seeing to it that established standards are maintained. Therefore, let us agree that the two, implementation and maintenance, are very closely related and what affects one affects the other.

The relationship of implementation and maintenance is a delicate one and brings the following aspect into sharp focus:

A directive, followed-up with integration of the new material into the *existing training program*,⁶ group discussion and additional detail as deemed necessary should be sufficient to implement changes in an organization. This assumes that supervisors enforce compliance and all concerned *comply*. Should daily inspection show irregularities, the first zone of consideration would seem to be *the human element*.

DISCUSSION

The two parables, The Little Dutch Boy and Cry Wolf, are worthy of modern day



U. S. Army Photo

FIG. 5. Bleeding Team in action.
Team work—team spirit.

comparison to our blood banking problems. The inability to recognize the need for technical advice is often a weak link in the blood transfusion chain. Certainly, the request for such assistance should be fully encouraged. However, pushing the panic button too late or when actually not indicated suggests a hot and cold type of planning and supervision. The cry "Wolf" has often catapulted men into making unwise decisions. Emergencies and problems arising in blood bank operations often fall into this same category.

In our constant "sprinting and spurting" it requires an *eternal vigilance* by all members of the blood bank staff to accomplish and maintain the following requirements:

1. Maintain high blood bank standards.
2. Self-Improvement.
3. Team spirit.
4. Provide adequate amounts of safe blood for the patient.

Experience at the USAREUR Blood Bank and other military blood bank installations has shown that the greatest efficiency is achieved when the following factors exist:

1. A heavy work load.
2. Inspiring and encouraging leadership.
3. Adequate supplies and modern equipment.
4. A vigorous blood donor program.

5. An active, enthusiastic training program.

6. Recognition and reward for accomplishment.

7. An intensive feeling of unit and team spirit; esprit de corps.

8. The spirit of competition embodied in the words "We do the difficult immediately—The impossible takes a little time."

SUMMARY

1. One of the important functions of the blood bank director is the maintenance and implementation of high standards which will provide safe blood for patients. Two guidelines are suggested and discussed.^{2,4}

2. Maintenance of standards is related to implementation stress being placed on the importance of 100% cooperation and compliance.

a. Transfusion Service Records are recommended as a means of maintaining both standards and quality control.

b. The human element (team spirit)—is discussed.

3. Methods of implementation suggested are:

- a. Directives.
- b. Training Program.
- c. Transfusion Service Records.

4. Delicate balance represented in critical blood bank situations is related to two parallels.

5. The daily problems of sprinting, spurting and eternal vigilance are discussed with emphasis on factors contributing to high standards and efficiency based on past experiences in military blood banks.

ACKNOWLEDGMENTS

The writer wishes to express his sincere appreciation to Dr. L. Jack Brenner of the Highland View Hospital, Cleveland, Ohio, for his helpful suggestions.

Appreciation is also expressed for the illustration and photographic work prepared and processed by the staff of the 26th Medical Detachment, Medical Illustration, U. S. Army, APO 180.

ADDENDUM

Subsequent to presentation of this article at the Laboratory Officers Workshop Proceedings April 1959 at Landstuhl, Germany, DA Circular No. 40-45, dated 23 November 1959 has been published.

Circular 40-45 states:

1. The American Association of Blood Banks is a nonprofit corporation with Central Offices at 1619 Michigan Boulevard Building, 30 North Michigan Avenue, Chicago 2, Ill. The association is a member of the Joint Blood Council, Inc., which is composed of representatives from the American Medical Association, American Hospital Association, American Society of Clinical Pathologists, and the American Red Cross.

2. The Scientific Committee of the Joint Blood Council, Inc., and the Standards Committee of the American Association of Blood Banks have prepared jointly a publication entitled "Standards for a Blood Transfusion Service." These standards have been published for the purpose of improving the quality and safety of human blood transfusions. The publications may be obtained from the Chairman, Scientific Committee, Joint Blood Council, Inc., 1832 M Street N.W., Washington 6, D.C., or the Chairman, Standards Committee, American Association of Blood

Banks, 30 North Michigan Avenue, Chicago 2, Ill.

3. Policy. a. The Surgeon General interposes no objection to United States Army hospitals becoming members of the American Association of Blood Banks.

b. The Surgeon General, Department of the Army, Washington 25, D.C., ATTN: MEDDD-HO, will be advised through official channels when a hospital becomes affiliated with the American Association of Blood Banks.

c. Copies of accreditation surveys conducted by the American Association of Blood Banks will be furnished The Surgeon General, ATTN: MEDDD-HO.

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OVERSEAS MAIL FOR CHRISTMAS

Christmas parcels for members of the Armed Forces overseas should be mailed early. They should be securely packed in cartons of wood, metal, or double faced corrugated fiberboard. Fragile items must be packed with special care. If in doubt as to items that can be mailed consult your local postmaster. MAIL EARLY.

A Review of the Bio-medical Aspects of Nuclear Powered Aircraft*

By

LIEUTENANT COLONEL CHARLES M. BARNES, USAF, VC†

INTRODUCTION

THE Air Force, in conjunction with the Atomic Energy Commission has under development nuclear propulsion systems for manned aircraft of the future. These nuclear propelled aircraft offer many advantages over conventional systems, most of which can be summed up in the single word *endurance*. The use of controlled nuclear heat to operate propulsion machinery makes it unnecessary to carry large quantities of fuel or to refuel in flight. The range of such an aircraft is essentially limited only by the endurance of its crew. Other apparent advantages include unrestricted low altitude and omni-directional target approach and ability to operate entirely from zone of interior bases. This aircraft will be the answer to many of our current problems such as keeping a large percentage of our retaliatory strike forces in the air at all times. On the other hand some people contend that use of nuclear powered aircraft may be extremely limited due to the hazards involved.

It is quite unfortunate that the nuclear era was ushered in by the use of atomic weapons for destructive purposes rather than peaceful power applications. As a result, the general public expects that everything connected with nuclear energy will either blow up or be exceedingly dangerous to handle. Too often the press has dramatized nuclear accidents far more than is warranted by the facts of the situation. This may be due to the unique and sinister aspects of the mode of injury—radiation being neither felt nor seen. It is important that we consider the unseen "rays," not as a deadly enemy, capable of producing injury and death, but as

energy which can be utilized to benefit man. Nuclear energy, like other potentially dangerous sources of power can be harnessed and utilized safely.

The purpose of this paper is to discuss the bio-medical factors arising from the use of nuclear propulsion for aircraft. It is assumed that the crew and ground support personnel are subjected to the nuclear environment routinely. The general public may also be involved in event of accidents. It will be shown that nuclear systems need not be overly hazardous and that the risks involved are not much greater than those currently experienced in conventional aircraft.

BIOLOGICAL EFFECTS OF RADIATION ON AIR CREW

In the design of a nuclear powered aircraft there must be a compromise in the amount of shielding which can be carried in high performance systems and at the same time provide adequate protection to the air crew. Large, heavy shields provide excellent protection but are quite unmanageable from the aerodynamic point of view. Therefore, one must examine in great detail the criteria for human exposure so that the shielding requirements will not be excessively penalizing to the airframe designer.

For many years it was thought that the effects of radiation upon the crew might be limiting the development of nuclear powered aircraft. A Medical Advisory Group for Aircraft Nuclear Propulsion was established by the U. S. Air Force School of Aviation Medicine to suggest standards for radiation exposure which would be acceptable to the Air Force along with the usual hazards of flight. It was probable that a considerable factor of safety was present in recommendations of the National Committee for Radiation Protection of the National Bureau of Standards. There was doubt that the Atomic Energy Commission regulations used for

* Remarks made at the 66th Annual Meeting of the Association of Military Surgeons, November 9, 1959, Washington, D.C.

† Life Sciences Project Officer, Aircraft Projects Branch, USAF-USAEC Aircraft Nuclear Propulsion Office, Washington, D.C.

industrial workers were appropriate for the military nuclear airplane program. As a result, the Medical Advisory Group studied in great detail the records of people exposed to radiation in an effort to determine a threshold for radiation damage. The victims of the atomic bomb in Japan were considered, particularly from the viewpoint that large numbers of people were exposed and the data had statistical significance. The Marshall Islanders who were inadvertently irradiated from "fall out" from 1954 weapons testing were similarly studied. Medical case histories of patients who had received large doses of X-ray in treatment of their disease also were examined as were a population of radiologists who administered X-ray therapy almost daily and had received considerable accumulated exposure. From all of these data, along with results from animal experiments, a tolerance dose of 200 rem (roentgen equivalent man—a measure of absorbed energy), was proposed for aircrew members of the nuclear aircraft. This dose would be received within the training period of about 10 years. The biological effect of this dose is generally considered negligible by the Medical Advisory Group and is acceptable for use in the military program. To prove this point, experimental animals (monkeys and dogs) have been irradiated with doses similar to that expected for the aircrew. These animals live in a select environment under the most favorable conditions and will be carefully watched for the balance of their life spans—10 to 25 years—to determine what effects, if any, the radiation has had on their health and life. Some of these animals now have survived over 6 years post exposure and there is no evident damage.

A band of donkeys which has survived chronic irradiation experiments and nuclear weapons tests are also being maintained for their life span in order that latent radiation effects may be determined. It is believed that these long lived animals simulate man more precisely than do common laboratory animal whose life is measured in months. One dividend which science will receive as a result of these intense studies of individual animal subjects will be information on some of the basic mechanisms involved in aging as well

as physiological data for certain species during their entire life span.

PSYCHOLOGICAL PROBLEMS OF NUCLEAR POWERED FLIGHT

In addition to the biological effects of irradiation it is considered that the psychological problems could be quite serious unless personnel were well adjusted, experienced, and knowledgeable people.

As you know, we are all being constantly irradiated with rays from naturally occurring radioactive materials in our environment, as well as cosmic rays. An aircrew will experience some additional radiation exposure within the shielded crew compartment. The question of whether crew members are amenable to the fact that they will receive this additional exposure has been studied. It is possible that personnel could become so obsessed with a radiation phobia that medical cases will occur. Since the crew will be composed of high caliber, cross trained personnel, such as combination pilots—nuclear engineers, it is believed that they will withstand these psychological trauma.

Since nuclear power provides extreme range in mission profiles it is expected that crews of nuclear aircraft will have adaptability for flying about 100 hours at a stretch. These long hours in flight, much of which will be routine with little work to do, will be characterized by monotony and generalized fatigue from performance in cramped quarters. It is for this reason that the crew compartment must contain all of the latest equipment for comfort and convenience. Since no other aircraft have been designed for routine flights of this duration it has been necessary to use crew compartment mockups to study crew stress and fatigue in some detail. Currently the Air Force has three such mockups, two of which are highly instrumented with automatic recording devices. Items which have been studied include total space requirements, psychological adjustment, food and water requirements, rest-work cycles, performance under routine and stress situations, and certain physiological measurements. Results from these tests indicate that man can perform satisfactorily under the prescribed conditions. No problems have

been found which seem insurmountable but the combination of minor difficulties dictate that continuing studies must be performed.

HEALTH PHYSICS AND GROUND SUPPORT

In one concept of nuclear aircraft design the protective shield will be divided between the reactor and the crew compartment. This concept reduces the overall shield weight for the aircraft but results in incomplete shielding of the propulsion reactor. Together with the fact that the reactor will be moving about the airbase as the aircraft taxis along the runway, a unique problem in health physics is presented.

In addition to the direct radiation from the reactor itself there will be secondary radiation from activated materials such as the airframe, waste products, runway, air, and dust particles. Under these conditions it is essential for the base health physicist to know precisely and at all times the radiation levels throughout the airbase. For this purpose, a system of remote monitors relaying information to a central location has been devised.

As a general rule there will be no planned exposures to ground personnel above that currently acceptable for workers in nuclear industry. This will tax the ingenuity of support personnel in order that highly radioactive aircraft may be rapidly and efficiently maintained. Remote maintenance equipment is being designed and tested to remove the most radioactive components for maintenance in "hot shops." Once this is accomplished, the majority of the aircraft can be checked or repaired with conventional manual equipment.

Support personnel can expect not only safe maintenance operation in the era of nuclear aircraft but more comfortable working quarters as well. Shielded vehicles will be air conditioned and contain the very latest concepts in human engineering design.

RADIATION PROBLEMS DURING BAILOUT AND AIRCRAFT CRASH

Current plans for operation of nuclear powered aircraft call for carefully controlled flight conditions. With exception of wartime operation, flights will be restricted to cor-

ridors of low population density under constant radar surveillance. Attention will be given to weather conditions and countermeasures procedures when the airplane is over the continental United States. We have devoted considerable thought and research to emergency procedures and the effects of a crash upon the populace. Let us look at what would probably happen in such a situation.

When the order is given to abandon ship the crew would eject in capsules which protect the crew member from wind blast and provide an all weather habitable environment during descent and while rescue operations are being initiated. The capsule is not shielded for radiation protection however, and while it is passing the reactor in the ejection trajectory the crew member would receive a small radiation dose approximately equivalent to that of a typical flight mission. This dose would not be measurable biologically. Other factors in crew escape are not particularly different than for other modern aircraft.

It can be assumed that in the crashed aircraft there will be a loss of cooling for the reactor powerplant and as a result the fuel elements will melt, releasing a portion of the accumulated radioactive fission products to the atmosphere. Nuclear heat, along with any chemical fire which may develop, will cause the radioactive particulates and aerosols to be lofted and carried downwind in accordance with the local meteorological conditions. In general, a pencil shaped area downwind will be contaminated. A region within a few hundred yards of the aircraft can be considered extremely dangerous. However, loss of life need not be much greater than with conventional aircraft of the same size. In fact, it has been shown statistically, that if nuclear powered aircraft are operated in accordance with planned procedures over sparsely populated areas additional mortality will be negligible. A small, additional risk seems acceptable, particularly when the operational advantages of nuclear systems are compared with conventional aircraft.

Crew rescue, fire fighting, and cleanup will be accomplished primarily with remote controlled or shielded vehicles. The heavy

radiation crew shield will also provide excellent thermal protection and there may be an advantage to the crew remaining in place for sometime rather than abandoning the aircraft after successful crash landings.

BIO-MEDICAL RESEARCH PROGRAM

The bio-medical research program in support of the manned aircraft program constitutes a large effort by many organizations. In general, the program may be divided into a basic research effort and a program of applied research. The basic research is sponsored by agencies other than the Aircraft Nuclear Propulsion Office and the results are more or less applicable to many other nuclear problems. An example of this type is the research program of the Biology and Medicine Division of the Atomic Energy Commission.

The applied research effort is generally funded and managed by the ANPO and the results are applicable primarily to the ANP program. Examples of research of interest to the manned aircraft program are as follows:

(a) Studies of the effects of exposure to radiation in doses equivalent to that which will be received by the air crew. These studies are performed with animals of long life span and large body size simulating man in this regard. Ethical considerations preclude use of man himself as an experimental animal for radiation experiments.

(b) Search for a compound which will alleviate radiation damage when administered as a pill either before or after irradiation.

(c) Psychological studies on crew stress and fatigue when confined in crew compartments for periods of time equivalent to a nuclear aircraft mission profile. Included are food and rest requirements as well as detailed equipment needed.

(d) Experiments with fission products released from a simulated aircraft crash conducted at the National Reactor Testing Station, Idaho and Dugway Proving Grounds, Utah. These studies include (1) the kind and quantity of fission products released, (2) their probable deposition in accordance with varying meteorological conditions,

(3) the effects of these fission products when inhaled by experimental animals simulating man, and (4) countermeasures which may be initiated to limit the untoward consequences of fission product release.

(e) Development of remote maintenance procedures for nuclear powered aircraft through human engineering and health physics techniques.

CONCLUSION

Perhaps this presentation may leave the impression that most of the bio-medical problems associated with the nuclear powered bomber program are nearing solution. Actually, there are many tough, detailed problems which will require years of effort and research. It is realized that there may be other problems which have not been recognized to date. However, we have approached the task of nuclear safety optimistically and are in full accord with the Medical Advisory Group for ANP when they state that . . . "the bio-medical problems of nuclear powered aircraft are not limiting the development of such systems. . . ."

The general public may rest assured that when nuclear powered aircraft fly, every detail of safety will have been thoroughly studied and that the Air Force can operate such systems effectively and without undue hazard.

SUMMARY

The Air Force together with the Atomic Energy Commission is developing nuclear propulsion systems for manned aircraft of the future.

Unique aspects of the radiation environment in manned nuclear aircraft presents problems to the crew and ground support personnel. The capabilities of nuclear powered aircraft to fly exceedingly long missions create added stress for the crew. Hazards surrounding the crash of a nuclear aircraft are not excessively penalizing. A research program to promote the safety of nuclear flight is continuing. While the bio-medical problems associated with nuclear powered flight are difficult, they are not considered as limiting the development of practical nuclear powered aircraft.

Problem-Solving Approach to a Nursing Situation

By

MAJOR PHYLLIS J. VERHONICK, ANC,* AND MAJOR MARGARET A. ROWLAND, ANC**

MANY problems which arise in nursing situations concerning the care of patients lend themselves to the "problem-solving" approach. One of the more simply stated approaches has been given by Doherty¹ as (1) defining the problem carefully, (2) planning a solution, (3) carrying out the plan, (4) checking the results, and (5) learning from experience. Frequently, in the course of administering care and solving the problems of the patient, we do not stop to examine the intricate and classical steps set forth to attain the solution to our problem.

The problems we may encounter in the care of our patients range from simple to complex. They may present a classical textbook picture but are more frequently complicated by realistic occurrences in the nursing situation. By using the problem-solving approach we have retrospectively analyzed the nursing plan of care for a patient with a jejunostomy and multiple bowel obstructions. Since the total plan of care for the patient was extremely complex we are limiting our analysis to one facet of the post-operative care: uncontrollable loss of intestinal juices through the jejunostomy opening. We have tried to identify the underlying scientific principles which dictate this portion of the nursing plan of care for our patient.

The basic premise underlying the development of a nursing plan of care using the problem-solving approach is inherent in Lambertsen's² definition of *comprehensive nursing*:

"Comprehensive nursing is a systematic process of problem diagnosis, problem analysis, development of a plan of care and continuous assessment of the evolving plan of care; it is not and cannot be considered a conglomeration of routine and isolated tasks or activities."

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A breakdown of the foregoing definition parallels the steps of the problem-solving approach as cited previously by Doherty¹ with the exception of its application to a nursing situation. It is within this framework that the plan of care for the patient with a jejunostomy was developed.

The nursing plan of care evolves from the medical plan of care. It is a constant state of change based upon the responses of the patient. The purposes for the medical plan of care have been set forth by the physician and they can be attained only through collaboration between the nurse and the physician. We believe that the nursing plan of care is not an isolated entity but is influenced by interdisciplinary planning. The nursing plan of care is essential to the successful attainment of the goals set forth in the medical plan of care.

Important nursing components in the total plan of care are: (1) supervision and evaluation of care (2) careful observations (3) complete and accurate reporting of the patient's symptoms and response to therapy, and (4) carrying out the physician's orders. These components are evolved from the six independent and one dependent legal functional areas of nursing. The relationship established between the nurse and the patient is a primary characteristic of nursing, which obligates the nurse to give care in the seven functional areas.³

THE INDIVIDUALIZED PLAN OF CARE

The individualized plan of care for the patient with a jejunostomy analyzed retrospectively stemmed from Lambertsen's definition of comprehensive nursing. In our analysis we attempted to probe into one aspect of the problems presented by the patient and to identify the principles which served as a guide to develop and carry out the nursing plan of care.

Our forty-year-old patient was admitted

from an overseas area with an original diagnosis of intestinal obstruction and post-operative wound infection. Several surgical procedures had been performed for adhesolysis repair of internal and ventral hernia, bowel resection, and finally a double-barrelled jejunostomy. The principal medical problems concerned the maintenance of adequate nutrition in preparation for the surgical efforts to re-establish anatomical and functional continuity.

The nursing problem which was most obvious and readily identified was the need for abdominal skin care of an irritated, angry, red area surrounding the jejunostomy opening. The continuous drainage from the hyperactive jejunostomy irritated the surrounding skin and because of the constant bathing with intestinal juices the skin of the abdomen and back became rapidly excoriated.

In identifying some of the specific principles which furnished the basis for developing our plan of care, we progressed through the following stages: to provide protection to the skin, to control the overflow of intestinal juices and to consider the influence of psychological factors. The continuous out-rush of intestinal juices and fecal material, which irritated the skin, suggested testing the pH of the excretion. The test tape indicated that the pH of the intestinal juices was within normal limits (between 7 and 8.5)⁴ but we questioned whether a change in the pH of these juices would result in an irritation of the skin. We assumed that a neutralizing protective substance, such as boric acid ointment or aluminum paste might be applied if the pH tended toward either acid or base concentration. The sodium, potassium, and chloride levels in the intestinal drainage were measured each day and losses of electrolytes were replaced parenterally as indicated by the physician. The loss of ions through hyperactivity of the intestines did not appear to alter the pH to a great degree. Intestinal juices were collected in a drainage bottle and administered back to the patient by gavage feeding. Our patient was observed closely

for signs and symptoms of electrolyte imbalance, and an accurate record of intake and output was maintained. Principle: *Normally the body's fluid output balances the intake and when fluid output exceeds fluid intake, dehydration results.*⁵

Exposure to air, gentle cleansing with pHisoHex, frequent wiping and application of and frequent change of absorbent dressing were tried respectively to remove or keep body secretion from irritating the skin. Protective agents such as aluminum paste, zinc oxide ointment, and plastic sprays were used locally but all efforts were to no avail.

Even though this overt problem was readily diagnosed, analysis and assessment showed we were a long way from solution. When the patient was initially admitted to the ward, French catheters had been inserted into the proximal and distal ends of the jejunum and connected to a low intermittent pressure pump. Intestinal juices continually seeped around the catheters and eventually peristalsis caused the catheters to become dislodged. We decided to substitute retention catheters for the French catheters in the search for an answer to our problem. Following consultation with the physician, retention catheters were inserted into both the distal and proximal openings of the jejunum. These catheters seemed to fit snugly and felt secure. They were then connected to a low intermittent suction pull. Principle: *Fluids flow from an area of greater to lower pressure and the rate of volume flow is proportionately related to the pressure gradient.*⁶

The low pressure intermittent pull seemed to coincide with peristalsis and to keep the overflow of intestinal juices under control. In time the skin condition began to show improvement.

Although we realized that psychological factors may influence intestinal action and secretion of intestinal juices we did not feel they applied specifically in this situation. From every indication, our patient appeared to have made a good adjustment to the ward and hospital environment. Regardless of stressful occurrences and procedures he appeared to be quiet and uncomplaining. He

appeared to be completely indifferent and disinterested in his surroundings. His wife spent a great deal of time with him and other members of the family visited occasionally. A near total absence of complaints was interpreted as complacency and cooperation. We assumed he had no complex psychological problems. However, an existent problem was not recognized until a much later period in his hospitalization. The overt symptoms of increased intestinal flow and hyperactive peristalsis could and did have a covert or hidden psychological basis. Principle: *Secretion of digestive juices and peristalsis are influenced by emotional factors.*⁷

We asked ourselves the question, "How does our patient view what is happening to him in this situation?" We scrutinized every possible factor in the ward situation and all types of relationships. We discovered finally that our patient had a fear that he was dying of cancer and that no one would tell him his diagnosis. During a later phase of his illness the patient had a psychotic reaction and previous undisclosed fears and feelings were brought to the fore. He had never verbalized any problem which added to the difficulty in its identification. There were several other patients recovering from malignancies on the ward and a few were rather grotesque in appearance as a result of surgical procedures. To members of the health team these grotesque appearances were a mark of success, but not to the patient. In addition, the prolonged hospitalization and repeated operations might have had an influence on our patient's thinking and attitude.

Looking back we also felt that the necessary placement of beds on the ward might have been a contributing factor to his "cancer phobia." The more seriously ill patients were located adjacent to the nurses' station and treatment rooms for intensive care and close observation. We had not told the patient why he had been placed under close surveillance of the nurses. In view of the grotesque appearance of patients, the repeated surgical operations and placement of patients on the ward, we can now see how they might have tainted the patients thinking

and deepened his feelings of pending death from cancer. Principle: *Psychological equilibrium requires ability to perceive and interpret occurrences in the environment clearly. What the individual perceives is based on his total life experiences as well as on his present involvement.*⁸

This retrospective analysis also showed that there were nonverbal clues which we overlooked initially. We have mentioned that the patient was visited frequently each day by his wife. He became dependent upon her presence in the vicinity. He also became more and more dependent upon narcotic drugs during his post-operative course. His condition warranted cancellation of surgery several times after he had been prepared for the procedure. We observed the patient's request for narcotics became more apparent after each postponement of surgery.

We recognized that he had not communicated with us but then we were obviously not communicating with him.

DISCUSSION

We have endeavored to relate how a nursing plan of care, based on the principles of science, was evolved for a patient with a jejunostomy. Formulating probing questions and seeking underlying principles has been a valuable learning experience. The steps in problem-solving derived from the definition of comprehensive nursing served as a guide, but we employed this method in retrospect and not when the overt problem of our patient presented itself initially. We have profited from this isolated experience and now attempt to approach similar situations with a definite problem-solving guide. We believe that the value of this case analysis will serve as a beneficial lesson to members of our profession. The textbook description of the problem-solving approach to nursing care is excellent but is difficult to teach or learn unless it is related to realistic situations in which the use of this approach is basic to developing a plan of nursing care based on scientific principles. We believe that a more concentrated effort should be directed toward this end.

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VOTE!!

"Good laws lead to the making of better ones; bad ones bring about worse. As soon as any man says of the affairs of the State, 'What does it matter to me?' the State may be given up for lost."—ROUSSEAU (1712-1778)

"A splendid storehouse of integrity and freedom has been bequeathed to us by our forefathers. In this day of confusion, of peril to liberty, our high duty is to see that this storehouse is not robbed of its contents."—HERBERT HOOVER

The Blessed Twig

A Historical Walk With Japanese Toothpicks*

By

MARY W. STANDLEE

(With seven illustrations)

PART I

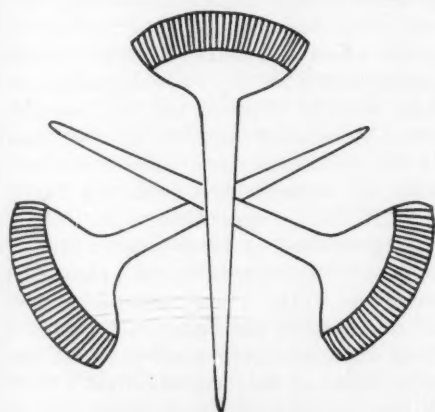
The Toothpick

TWIGS, grasses and reeds were primitive man's first artificial tools for removing food particles from the teeth. Among the first to show cultural progress were the Babylonians, who had such cosmetic aids as tweezers, ear picks and toothpicks as early as 3500 B.C. Although China

the Chinese have means of bleaching teeth but HWANG TI mentioned as dental remedies specific drugs such as pomegranite root, opium, ginseng, moxa, rhubarb, mercury, sulphur, garlic and excreta, both human and animal.¹ Moreover the Chinese had both permanent and disposable types of toothpicks, and in regard to the latter they believed that using and chewing a "fragrant" stick, possibly the HAIGI or Chinese Agrimony, was beneficial to the gums and teeth.

This was a long time before the era of GUATAMA BUDDHA (563-483 B.C.), to whom nuns supposedly confided that the people suffered from halitosis with the result that Buddha provided a *sutra* which encouraged the use of the YOJI or toothpick by all classes of people. From the period of dated Buddhism, therefore, oral hygiene and the toothpick had religious significance which was in sharp contrast to the latter's ultimate acceptance in Europe as an upper class distinction and social amenity.² Of the wooden toothpicks used by Europeans those made from the "toothpick tree," *Lentisk*, were the most popular.³ The Japanese, however, favored toothpicks made from KURUMOMI, a plant of the camphor tree species whose bark was used in making medicinal tea for the treatment of beri-beri as well as a specific for application to boils and cuts.⁴

Beliefs in demonology flourished in all primitive civilizations, including the acceptance of disease and physical afflictions as divine scourges. As in early Mesopotamia, in the Orient priests were the first healers; with the spread of Buddhism through India, China, Korea and, after 645 A.D. in Japan, Buddhist doctrines as well as its primitive superstitions flourished. Priestly exhortations and incantations were more familiar to the ailing than effective medicine, and even in modern times the Japanese generally show a



枝楊魁花

FIG. 1. Oiran Yoji.

was cut off from the world, in the legendary age of 2693 B.C. the Emperor HWANG TI recorded contemporary prehistoric man's suffering from oral discomforts. Not only did

* Unless otherwise indicated the dental lore has been adapted from a *History of Dental Culture* prepared by Heita Yamada (Nihon University), published in two volumes (1934, 1935), by the Japan Dental Cultural Association. Part I, Customs; Part II, Development of Dental History, read from the Japanese by Shigehide Hasagawa; scientific editing by Dr. Joe Niiya, 406th Medical General Laboratory, U. S. Army, Camp Zama, Japan.

reluctance to using pills and potions.

Long before their invasion by the Buddhists the Japanese had a religion peculiarly their own, Shintoism, whose theory provided for life after death in new form—animism. Plants and animals not only had symbolic characteristics but were accorded spiritual values. Reincarnation of the body in a desirable form was believed dependent on a virtuous mortal life, and romantic legends as well as tales of heroic prowess employed magical changes as suspense devices. Not only did the pious pray at the graves of those who died of toothache, in the belief the departed spirits would provide relief, but some accepted the legend that the YANAGI or willow tree, a symbol of luck and felicitation, especially to the poor,⁵ was the abode of a feminine KAMI or god able to effect cures. In some rural localities sufferers still thrust a needle into the tree in the belief the god will relieve their ailment in order to save itself pain.⁶ In order to survive in Japan the Buddhists were forced to make many philosophical concessions to the national religion, and as their tenets and their superstitions merged, untangling their doctrines became extremely difficult.

Among the seventh century innovations brought from China and Korea was the JUNISHI or Zodiac calendar. This form of reckoning, based on the lunar system, assigned to each year, to each twelve months of the year, to each day and each two-hour time interval in the 24-hour span, the name of a Zodiac animal. These included the rat, ox, tiger, hare, dragon, snake, horse, sheep, monkey, cock, dog and wild boar. There were other significant factors such as the influence of the five elements, wood, earth, fire, metal and water, each with positive and negative "qualities," and the stars. All of the animals had symbolic characteristics, and one of the most revered was the snake. Those individuals born in the "Year of the Snake" were considered extremely lucky and persons who dreamed of snakes considered the dream a lucky omen of unexpected wealth.⁷ The snake was protected in shrine enclosures, and the

congenial mingling of religious mandates on dental hygiene and the supernatural appears in a legend of an old priest so disturbed by the reputed gluttony of a venerable white snake that he sought divine intervention for his rapidly diminishing flock. As the story goes he was told by BUDDHA that those of his people who carried a YOJI carved in the monster's likeness would be spared.

Sensitive evaluation of Japanese medical and dental customs and therapy requires acknowledging their Chinese origin. The TAIHOU-RITSUROYA or Law of Taihou included medical regulations, the ISHITSU-REI (701 A.D.), adapted from this source. Stomatology, diseases of the mouth, and ophthalmology and otolaryngology were considered a division of general medicine; mastery of the didacticism of this field alone required a four-year period of study.⁸ As the Japanese then had no written language all texts were in Chinese, and for centuries thereafter volumes tagged as Japanese were in fact recapitulations of Chinese treatises. This was undoubtedly true of the REJU MEIBUTSU, a small dissertation that reputedly appeared in Japan between 947-956 A.D. and listing the benefit to be derived from using the YOJI. These included: a pure breath, a healthy alimentary tract, improved taste, improved digestion and improved eyesight. When at about the same time YASUYORI TAMBA, the most famous of all Japanese medical recorders, prepared his ISHINKATA or ISHINPO, he included what were probably the Emperor HWANG TI's empirical comments on gingivitis, dental caries and cancer of the mouth.

The Japanese maintain that archeological remains substantiate their claims to varied fashions in teeth as far back as the Stone Age. These included jeweled teeth, dyed teeth, saw teeth and filed teeth. Moreover they believe themselves among the first to recognize a relationship between food habits and dental caries. The ancient inhabitants of Nihon subsisted mainly on cereals and fish. Some animal flesh such as horse, deer, rabbit, bear, wild boar and birds were incidental

items, for after the advent of Buddhism they were subject to religious prohibitions on meat. Morning and evening meals were customary prior to the arrival of the Koreans and Chinese, after which a noon meal was usual, and new foods such as pheasant and duck became popular substitutes for meat. Sake, the native rice wine, was familiar to the Japanese from time⁹ immemorial but liquid was not ordinarily consumed with meals until after the Zen sect of Buddhist priests imported tea in the 14th century.

Regardless of the food habits of adults, Japanese children, some say as a matter of economy, are nursed until well along into childhood. Up until the 17th century the ceremony of KUISOME, representing the child's first adult food, took place at the age of three years. Customs began to change at this time and during the EDO Period (1603-1868) a symbolic food ritual took place at the age of 120 days. Rice is considered "sacred" as it represents harvest and plenty. It is not only the first offering to the KAMI but it is traditionally the first solid food offered the Japanese infant, the father chewing the first rice placed in the mouth of his son and the mother performing the same service for female children.

Superstitious beliefs that bad luck follows a child born with a tooth or teeth prevailed in many other countries,¹⁰ but in view of the nursing habits of the Japanese young it is understandable that in such cases the mothers were more credible than maternal. The presence of teeth in the newborn marked the unfortunate infant as an ONIKKO, child of the ONI, devil, and for many centuries it was promptly killed. With the greater enlightenment of the EDO Period superstition conceded that such teeth might indicate a strong stomach and hearty digestion and thereafter, until modern times, the infant was "killed" symbolically as an appeasement to the ONI. In order to accomplish this the mother abandoned it on a street corner or in a public place but under the watchful eye of a friend who returned it home. Moreover the proverbial ounce of prevention versus the pound of cure

showed up in early pre-natal practices, for superstitious mothers often went to the riverbank to sprinkle salt on the water, an omen of good luck, after which they carefully placed and burned four joss sticks in the four heavenly directions. On the other hand an infant slow in cutting its first teeth was reasonably sure of being offered to the gods symbolically, in the form of a rice straw doll sacrificed in the river.¹¹

When children shed their milk teeth, ordinarily a painless and natural process, some families still place an upper tooth under the house floor to encourage the new members to grow down, whereas the lower teeth are placed on the roof to insure upward growth.¹² In the old days in Japan PACHETEERS extracted teeth by using their exceedingly strong fingers, apparently trained for this purpose by forced removal of pegs from wooden boards,¹³ some authorities believing their success due to a prior loosening of the teeth by a hammer or mallet. Moreover, since the ISHI or physician carried the customary all-purpose short sword or knife in their girdles it was probably this group who performed such oral surgery as was done.

In contrast an account of early Chinese methods credits dental quacks with extracting teeth, the method being to seat the customer on a stool before tying strong silk to the aching member. He was then told to close his eyes and concentrate while the cure was effected—the quack discharging a large firecracker under the stool to frighten the sufferer to escape, whereon the tooth was jerked loose.¹⁴ Variations of this story are known in other countries including rural America, where string is tied to a quickly slammed door. Some extraction with crude dental tools may have been practiced in Japan in Medieval times but neither the instruments nor reliable descriptions of the methods have survived.

In view of the general similarity in the dental history of the Middle and Far East, Japanese claims to making artificial teeth, GISHI, at least a century before Western Europe developed the technique may be supportable.

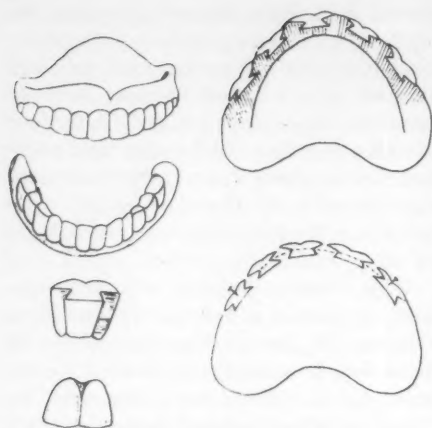


FIG. 2. A Dental plate of Tajima Yagu (29 Sept. 1673). Plate—wood; tooth—alabaster.

Wood carvers are supposed to have made primitive replacements for warriors, the method being to make a mold from boxwood, cherry or willow to which were fixed "pegs," usually carved in sets of two, treated with rice powder, then with paste and finally with rice powder. As in other countries the patient's original teeth, animal teeth or purchased teeth may have been so treated before being framed for return to the mouth. Alabaster teeth were both decorative and durable and therefore an easy choice for replacements, as shown by the tomb excavation¹⁵ on June 17, 1927, of a swordsman named TAJIMA YAGYU, who died 29 September 1673 A.D., whose upper wooden denture of alabaster was in a good state of preservation.

Chinese medicine decreed that the teeth were a type of skeletal tissue, hence anything believed beneficial to the formation of bone was considered helpful. When making artificial teeth of animal structure, both horse and deer bone were used, well boiled before polishing with shark skin oil. The oldest form of dental prosthesis, natural teeth strung on flax,¹⁶ is similar to the early Japanese method of attaching by pressure artificial teeth to the permanent teeth or to a mold. For this they used MAWATA, the first very strong silk from the cocoon. Prostheses were made for

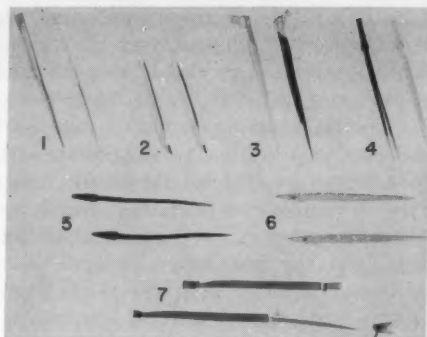


FIG. 3. 1. Fan shaped tooth pick; 2. Pipe shaped tooth pick; 3. Tie shaped tooth pick; 4. Pine Needle tooth pick; 5. Eel shaped tooth pick; 6. White fish shaped tooth pick; 7. Straw containing tooth pick.

the upper arch before the lower, and gold, a "lucky" metal as well as a practical media, preceded silver in use. Dental technicians known as KOCHO IREBASHI did such work and the position was hereditary, one family, the MATSUI, functioning under the name of GENSUI for fourteen generations. The selling of dental medicines was a natural adjunct of this business.¹⁷

There have been recurrent periods in Western dentistry when the toothpick was not only socially but professionally taboo and considered injurious to the teeth. Such does not seem to have been the case with the many varieties in Japan. The TAKAYOJI was used as a small brush for falcons, the game hunting bird of medieval gentlemen, as well as for the teeth. The HANEYOJI was a



FIG. 4. Tooth brushes.

group of soft bird feathers tied as a brush and used for applying gall nut or other stain in the OHAGURO or tooth blackening ceremony for women. Similarly the YANA-GISEI FUSA YOJI was a soft brush used particularly by women to prevent the stain from rubbing off when cleaning their teeth; the bristles were softened before use by finger rubbing and after use the brush was broken in half to prevent bad luck. The KAMBOKU FUSA YOJI was for men only as it was made from unusually tough wood. The FUDEYOJI was a more general cleaning instrument. The TSUBOUCHI YOJI had one end flattened into a fan-shaped brush, usually by boiling to a semi-pulp before crushing one end into needle-like spears.

Superstitions are as inconsistent as their perpetrators. The SARU, monkey, ninth in the order of JUNISHI animals, is a controversial subject. Belief in its occult powers dates from the mythological age when the first Heavenly landing party came from a world of chaos. On arrival they encountered SARUTAHIKO a gigantic monkey KAMI so fierce that he not only routed evil spirits but frightened all the godly settlers except UZUME-NO-MIKOTO, the ugliest female KAMI, who reputedly subdued and intimidated him into guiding the party to its destination. Just as this legend quite innocently gives Darwinism a boost, later but still primitive myths of the sacrificial offerings of beautiful maidens to huge monsters provide a setting for romantic accounts of their freedom by bold warriors. SARU was originally an omen of good luck and as such the monkey became the patron diety of the HIYOSHI Shrine.¹⁸

Literally translated, SARU means "to go away" and so its name was not spoken at weddings lest the marriage fail. By the time the EDO Period emerged SARU and bad luck had potent associations, and merchants, stock peddlers, speculators, gamblers and restaurant keepers substituted the word EKE in general conversation. Some toothpick specialty shops are known to have existed at this time as one is listed as burning in the great

Tokyo fire of 1657. Oddly enough the monkey sign became the trademark of the YOJI shops, which were called SARUYA or "the place of the monkey." Tradition credits this choice to the monkey's adaptability as well as to his extremely strong teeth. One such shop still exists in Tokyo, managed by the seventh generation of the Yamamoto family.¹⁹ Like YOJI carved to represent the snake, a SARU toothpick repeatedly protected the user.

Spring toothpicks were made from wood of the willow tree; summer toothpicks were made from cherry; autumn toothpicks were made from chestnut. The winter variety were made from mandarin orange wood introduced from China about 2,000 years ago and whose fruit was believed to have medicinal qualities, especially for afflictions of the throat and mouth.²⁰

Not only were YOJI identified by seasonal use and trade names but the materials and styles varied with changes in Imperial reign. For instance the KONBU YOJI, a sturdy little instrument retaining some of the original tree bark, was favored by the SAMURAI or warrior class of the MUROMACHI Period (1333-1603). Contrary to the rather general use of pine toothpicks in other countries, the SUGI YOJI, cut from the cryptomeria, never dominated the Japanese market. The TAKE YOJI was made from bamboo; the NIHOI YOJI was styled like a spear; the two-piece HIRA YOJI had one flat surface and was used as disposable chopsticks, usually accompanied by a small bamboo paddle for eating bean paste sweets. In some cases the handle end of the paddle was sharpened for later picking of the teeth. Both the TSUBOUCHI and the UCHI YOJIS were mascerated on one end into a flat toothbrush. The KATAMI YOJI was a special votive presented as a SENBETSU or farewell gift when friends parted for long journeys.

Some shrines gained impressive reputations for effecting dental cures and as a consequence sold YOJI believed to have special votive powers and healing qualities. When the sufferer was cured the toothpick was returned to the shrine as a testimonial, possibly

to be used again. A shrine in Nagano Prefecture, an area noted for its delicious pear fruits, enjoyed such widespread reputation in this respect that many potential sufferers in the Tokyo area dropped fresh pears into the SUMIDA river in the belief the fruit would float to the shrine and protect them.

YOJI made during the EDO Period were approximately 12-18 centimeters long, and they were ordinarily carried in the soft "nose" paper used in lieu of handkerchiefs. The TSUMA YOJI appeared during the middle of the EDO Period (1603-1868), and as KO-YOJI or a variety smaller in size, has remained popular.

Permanent type toothpick carrying cases were used by the Sumerians as early as 3000 B.C.²¹ Although they had been familiar in the Orient for centuries the Japanese apparently took little interest in them before the mid-eighteenth century, about the time they were becoming popular in Europe.²² Metal or hard cases were never especially satisfactory accessories to the type of clothing worn by the Japanese and they preferred a simple and flat ornamental pouch called the YOJI-IRE, usually made of soft leather, brocaded or embroidered material.²³ As in the days of antiquity the permanent YOJI was associated with the tweezer and ear scoop and ordinarily such tools were made from bone, ivory, silver and gold. Occasionally permanent toothpicks are still seen in public use, the owner discreetly screening the mouth from view with the left hand. Moreover, if the present availability of wooden toothpicks is any indication of oral hygiene practices, Japanese dental vigilance has changed little through the centuries. Village stalls, department stores and even the now more rare SARUYA shops do a thriving business. Special toothpicks such as the KONBU YOJI and those cut in special shapes symbolic of fish and pipes or containing FUDA with printed fortunes are usually products of a home industry, but many of the ornamental varieties are, however, assembled, that is decorated and packaged, in the specialty shops.²⁴

Public eating places from the SUKIYAKI

and TEMPURA bars on the side streets to the elite Imperial Hotel provide YOJI in conspicuous places. YOJI-TATE, toothpick holders, are made in hundreds of cunning varieties which include bamboo, pottery, porcelain and metals. Many are made to represent legendary gods and symbolical figures as well as articles of ordinary use. Nor is the individual carrying case extinct, for many sartorially well equipped Japanese gentlemen carrying an individual case with the familiar tweezers, ear spoon, fingernail clippers and a durable personal YOJI, a golden version of which is reported in high style in some of the larger American cities—at an estimated twenty-two dollars each.²⁵

PART II

Quacks and Cures

Charlatanism is not confined to any one race or any single period in history but the Japanese prefer to think that like other phases of their early culture the quack came from China. It is a comforting thought however unreliable, for whatever the primitive civilization medicine and magic have had much in common. Dentifrices other than salt, which was held in the left* and more revered hand, may have been used prior to the sixteenth century but some authorities think the art of blending, called CHOJIYA HAMIGAKI, was introduced from Korea about 1643. The resultant product, required washed sand from the Chiba Prefecture and CHOJI, powdered clove. To this mixture, varying with the area, pulverized white stone or browned rice powder may have been added. As prepared toothpowders became better known many racketeers sold a harsh product made of gypsum, chalk or calcite which nevertheless was harmless if swallowed.

Dentifrice salesmen often were street vendors who used various methods of calling at-

*The left hand represents the male "principle" and the right the female. The left is therefore the stronger and more dominant force, and this assignment of "power" had a marked influence on medical diagnoses as well as on religious and civil customs. Some Easterners have religious taboos about the right as the unclean hand because it is an adjunct to body cleanliness.

tention to their wares. They dressed in fancy costumes of a type still used throughout Japan by their successors, the special advertisers who stroll the streets in behalf of new businesses, sales or unusual products. In addition to their hawking, drums, whistles, placards and an informal dancing exhibition enticed and held the crowd. Of these hawkers the KYOKU KOMA used a top spinning trick, a form of entertainment some authorities believe was unknown in Japan prior to 1700 A.D., and which reached its pinnacle of fame in ASAKASU in 1826 when GENSUI MATSUI, a medicine peddler, entertained the SHOGUN.²⁶ The IAINUKI were sword dancers; the KYOKU MARI, reputedly the first type of charlatan to come from China, rang a bell. The KOWAIRO imitated the voices of famous actors; the HAMIGAKI URI combined ventriloquism with entertaining stories and jokes; the ODEDEKO-SHIRAI presented a "cottage play"—something similar to a Western medicine show; the KEIBUTSUHON was a form of advertising leaflet. The wide distribution of many of the early Japanese wood block prints is tied in with the sale of dentifrice, for some advertisers or hawkers early learned the psychology of the give-away sale. The HIKI FUDA, meaning a small paper with picture, was distinctly a hand bill but when folded to make a container, UKIYOE or bag for tooth powder it attracted customers, especially women.

Many dentifrice hawkers were such versatile fellows that they combined the sale of toothpowder with the practice of chiropody, a practice reminiscent of the early barber-surgeons of other countries. As there was little or no prosthetic filling, crown or continuing orthodontic work, amulets were a profitable sideline for vendors. An interesting type of charlatan appeared during the feudal period—the ronin or free soldier with no liege ties. Some not only made and sold bows and arrows and peddled remedies but did extractions and made GISHI. These they assured all listeners would enable them to eat hard foods in complete comfort. In addition to the cosmetic and dietary advantages of

prostheses, replacement of lost teeth was pleasing to Buddha, for the "whole" body was considered sacred, a philosophy that impeded the employment of surgical measures in Buddhist countries.

Nor were all charlatans male adventurers. The theory of relationship between dental caries and a destructive tooth worm recurs in the dental history of many countries and long pre-dates the middle ages.²⁷ From China, however, it came to Japan, where it was generally believed that small worms penetrated the enamel and caused decay. Their removal became a thriving business, especially for women who "hid under (their) nails some dry willow debris . . . (to be) scattered on the surface of water in a bowl; the surface tension of the water with (the) dry willow powder produced a slight wormy movement. Thus (the charlatan) she presented to her client a worm or worms according to a fee agreed upon."²⁸ The old practice of "fumigating" to remove the tooth worm was likewise practiced in both China and Japan. This treatment required that a heated tile be dropped in boiling water containing leek seeds, the sufferer holding his head over the vessel until the "worms," the steam, escaped from the ears. The Japanese character or word for worm and decayed teeth or toothache is MUSHI-BA, so this superstition predates the written language.

The SHOGUN, overlord, and the DA-IMYO, Japanese feudal lords or aristocrats, maintained small dynasties of isolated splendor, and it was usual to have a medical retainer on the staff, men whose positions were hereditary, characteristic of all positions in the feudal-type social structure of the era. One of the earliest treatments by magic involved the FUDA. On it was drawn the picture of a decayed tooth, identified by the proper worm-character. The entire drawing was then painted black and the FUDA was folded four times before being nailed to a post, the nail driven through the character, thus curing the toothache by killing the worm symbolically. A similar treatment provided that the sufferer stand on a large sheet of paper on which was drawn an outline of his feet. The paper outside the lines was painted

black, but in the remaining white area was drawn a face complete with eyes, nose, mouth and teeth. Nails were driven through the teeth symbols and a cure was presumably effected.

MAME, beans, is synonymous with health and activity. Like rice, beans are a staple in the Japanese diet. Old superstitions credit beans with the power to prevent toothache, i.e., if beans do not sprout then the teeth do not ache. Consequently, many faithful followers of old superstitions planted a handful of beans so deep in the shrine compound that there was little chance of germination. The more cautious and far seeing are credited with roasting the beans before burial.³⁰

The ONI or devil features largely as a cause for toothaches. The SETSUBUN or annual bean-throwing ceremony now held on 2 February of the Georgian calendar formerly was held on New Year's Day under the *JUNISHI* or lunar calendar. At this time the head of the family throws into the corners of the room a special holiday bean, later consumed by members of the family in proportion to their age, and the ONI is symbolically excluded from that household for the ensuing year. The ONI, fortunately, was known to be especially fond of sardines. As another preventive measure a fish head often was impaled on a twig, some say of holly, and hung before the entrance to dry. If a member of that family had toothache during the ensuing year the dried fish head was mascerated for a poultice. HARITI, the legendary devil woman of India who bore 500 children of her own but stole and consumed the infants and children of others until converted by the mercy of Buddha,³¹ is known in Japan as KISHIMOJIN. As the legend goes, she was entirely vicious until one of her own children was stolen and hidden to teach her that all children are loved by their parents. As a substitute for her depraved diet, Buddha gave her the ZAKURO or pomegranate, emblem of fertility, as her special fruit—not only because of the multitude of seeds but because the berry has a sour taste similar to human flesh.

And so KISHIMOJIN is pictured benevolently for posterity, an infant cuddled in her left arm, a pomegranate held in her right hand. To her shrine in Yokohama go thousands of mothers, not only to pray for fertility but with children suffering from toothache and other ills, to pray for relief. Although children who eat the pomegranate berry are supposed to be safe from the evil spirits, in Osaka, in the southwestern part of Japan, at the HAGAMIMYOJIN, Shrine of the tooth god, chopsticks are distributed on the 21st day of each month. Persons eating with these tools for one week are supposed to be relieved of toothache.³²

Simple home remedies for toothache were made from ordinary materials, basic remedies that may have stemmed from Greek medicine. A mouth wash or gargle was made by boiling and using while warm one hand-measure of pine needles in salt water. SANSHO, a Japanese pepper, and boiled vinegar served the same purpose. MOMME, sesame seed, heated until dark and chewed while hot; black beans boiled in sake; and pressed, dehydrated eggplant mixed with equal parts of alum were local treatments.³³ The boiled meat of the wild peach, mythologically of feminine gender³⁴ and the only fruit to attain diety status, used while warm, or SHOCHU, an inexpensive wine, likewise were favorite gargles. A mouth wash or gargle of water taken from the public bath was supposed to strengthen the teeth, but if they ached unduly, simple probing with a "needle" of a red shrimp was supposed to bring relief.³⁵

The practice of holding human milk in the mouth is a remedy that predates recorded Japanese history and is still practiced in parts of China. Poultices made from ten kernels of peppercorn and ten red beans were considered effective. In addition to encouraging bone growth, a silk-wrapped horse bone, old snake skin or the dried tongue of a woodpecker, if applied directly, were supposed to relieve toothache. ZINGIBAR MISGA, like GOBO a popular and edible plant, may have been used as it was supposed to produce forgetfulness. Garlic, a remedy of the ancients,

mixed with HAOSHIROI,³⁶ an unidentified substance, and powdered KONBU, kelp, was a popular local treatment. Powdered daffodil bulb and rice powder; the powdered skin of dried eel; pepper mixed with GOHAN, the ceremonial rice; and browned pickled plums mixed with alum all were popular bases for dental poultices. Nor did the sacred tortoise, symbol of long life, escape, for he was often forced to sacrifice his tail, which was peeled and probably scorched before being used on aching gums. If an onion boiled in sesame oil changed color on application to a sore tooth the impurities were presumably withdrawn; but whatever the ingredients of the poultice, in Japan it was usually wrapped in soft white paper before local application.

From the Chinese the Japanese acquired expertness in the moxa arts, burning the skin with mugwort pellets, and acupuncture, a form of counterirritant through insertion of metallic needles in specific areas of the body. Such treatments were recommended as freely for dental ails as for other physical afflictions, the areas determined by the sex of the individual as well as the location of the pain. In cases of toothache the small finger or small toe was recommended for treatment, and for chronic bone diseases daily treatments were required, with the moxa applied three or five times on the right or left hand as indicated by the maxillo-facial pain.

PACHETEERS are believed to have had some unusual anesthetic drugs. Opium, an old stand-by from China and other ancient civilizations, and hemp were certainly used to some extent.³⁷ In the KOKIN CHIEMAKURA (1751-1763) GENTAKU KAWAUCHI described his "sacred," meaning exclusive, technique for the painless extraction of teeth. Symbolical purification ceremonies were religious in origin and usually included part of the Shinto ritual of KASHIWADE or hand clapping. This gesture not only concentrated the worshiper's attention on his religious duties but it was an attempt to call the attention of the Shrine's particular god to the prayer and offering being made.³⁸

KAWAUCHI reported hand clapping as

his preliminary step in mixing a paste of equal parts of SOUZU, *Aconitum japonicum*, SAI-SHIN and ASARUM, Japanese pepper and ginger. With this he packed the aching tooth for an unspecified time before extraction. A mixture of pungent grass, clove or camphor, scorched salt, the green leaf of the YUZU or citron, a tree peculiarly sacred to the enjoyment of the upper classes,³⁹ and bees' nest was also compounded for use as an anesthetic. CHOSEN, a small dried root of the Aristochiaceae family was used in some medicines and NINJIN, ginseng, undoubtedly had a place in the primitive pharmacopoeia. Brought from Korea in the early days it was an extremely costly drug and used only as a "last resort" medicine, so costly in fact that poor girls often sold themselves as prostitutes to buy NINJIN for their ailing parents. White ginseng, made by drying the aromatic root, and brown ginseng, made by steaming it before drying, were sliced and chewed or brewed into a stimulating tea.⁴⁰

In the sixteenth century Japan closed her doors to the outside world; as foreigners had never been present in substantial numbers their absence was hardly noted. Some foreign books were re-admitted after 1720 A.D., but custom was so entrenched and the dissemination of knowledge so slow that their influence on practical Japanese dentistry was negligible. Certainly the preparation sponsored by SEISHU HANAOKA,⁴¹ nineteenth century PACHETEER, showed little foreign influence. Called MAFUTSUSAN or a "powder to make go away," it was composed of equal parts of MANDRAGORA, morning glory seeds, a Chinese remedy,⁴² BOKE, the root of one species of Japanese quince, SENKYU or *Cnidium*, BYAKUSI, the root of *Angelica glabra*, and TOUKI, root of *Ligustrum acutilobum*.

By the end of the eighteenth century GENZO NANIWA was claiming painless extractions as a result of presurgical application of cotton pads soaked in a water-base preparation called TADE, smart weed or knot, but the source of his inspiration is unknown. Abrasives popular in Europe at this

time were also familiar in Japan and many were so harsh as to be damaging. These included calcined flint, pumice or coral, powdered shells, cuttlebones, cinnamon, nutmeg, orris, mastic, alum and musk. Progress began with the end of the Tokugawa Shogunate. In 1874, at the time of the startling general education reform of the Emperor Meiji, the Department of Education Ministry enacted a law prohibiting dental treatment with religious charms as childish and unenlightened, but superstition did not thus easily lose its hold on an imaginative and custom-bound people. In 1860 William C. Eastlake came to collect shells and to travel. In 1880 he returned to remain seventeen years. If Pierre Fauchard (1678-1761) is the "father" of dentistry, then Dr. Eastlake enjoys a correlative status in Japan. His instruction is credited as the most pronounced single factor not only in the development of modern Japanese dentistry but as the impetus to American technical influence on dental training rather than, as in the case of medicine, the more classical German. Dr. Eastlake's first instruction was in the treatment of pyorrhea and calcium deposits. KURESOTO, creosote, and tincture of iodine then were the stock treatments for bleeding gums and exposed nerves. Such treatments were occasionally supplemented by cotton balls soaked in creosote and arsenic trioxide, the balls attached to the tooth for forty-eight hours before the cavity was widened for filling with SANDARAC, a white transparent resin of African origin used in alcohol solution, and VINISH. As in the days of ancients, simple gargles of salt and alum were encouraged.

Neither then nor now, however, was the YOJI neglected in either fact or fiction. Oriental folklore has its special kinds of fairies and in Japan they are often depicted as miniature SAMURAI, feudal warriors of heroic prowess. Lafcadio Hearn retold charmingly a moralistic Japanese fairy tale called "Chin-Chin Kobakama" wherein the pampered and lazy young wife of a SAMURAI hid her used toothpicks under the edge of the tatami, straw floor mat. In her dreams she was plagued

nightly by warlike goblins, her conscience, at the "Hour of the Ox," 2 A.M., until she mended her ways.⁴⁵

PART III

The Toothpick Adapted to Feminine Habits

Like Buddhism, both directly and indirectly the Shinto doctrine influences all phases of Japanese life. Through Shintoism and its emphasis on cleanliness and purity the Japanese have developed outstanding habits of personal hygiene. Salt, symbol of purity and used in various ways to drive out evil spirits,⁴⁶ was usually added to mouth rinses. Moreover, there is an old Japanese proverb, SITASIKI NAKA NIMO REIGI ARI—that provides in effect "There shall be no intimacy without politeness."

In the old days women seldom attended public functions and certainly, since they never mixed with men on an equal social basis, they must have picked their teeth and gargled privately. It was a fashion at various times for them to serve gentleman callers, whether in private houses or in the JOROYA, houses of prostitution, small bowls of hot salt water for gargling before the social visiting began. A Shintoist's personal ritual for beginning the day is strict. It includes prayers, lustration, a clapping of hands, offerings to the household gods and in many instances the first of several of the high temperature body-warming baths that contribute so much to the Japanese' resistance to the penetrating cold of their damp unheated buildings. Cleansing the teeth and gargling are part of the pre-breakfast ritual.

At that period in history only young apprentices who arose too late to reach their work on time were excused in delaying their oral hygiene until noon. Not only were women admonished not to appear before the family orally impure and uncombed but even the idle old men who lived with others, usually the eldest son, and had little to do except contemplate the Eastern sun, had a proscribed routine. For instance, as noted in the ROJIN YOSAN, at breakfast a small amount of



Fig. 5. Using Fusa Yoji and Gargling Bowl.

blood-warming sake was allowed, after which the YOJI must be used. And after twice gargling, a measure of salt was rubbed on both sides of the teeth as a polish,⁴⁵ a custom still followed extensively in rural areas. A third and clear gargle then followed. This was spat into the hand for immediate application as an eye wash. Not only did the KUCHISOSOGI, one of the Shinto purification ceremonies, require that the hands and mouths of shrine visitors be rinsed but the root word UGAI has a double meaning. The thin salt gruel used after the morning religious ceremony is called UGAI as is the physical act of gargling, an accomplishment specifically compared to the practice in cormorant fishing whereby the predatory bird is forced to regurgitate its catch for the benefit of the master.

Prostitution is as old as time itself, but its regulation as a Japanese business was not recorded in the KANTO or Tokyo-Yokohama area until the time the Tokugawa Shogunate established EDO, about 1590.⁴⁶ When the seat of government was relocated from KYOTO to EDO, or Tokyo as it is known, the various sections of the city were

named very much as are suburbs of all metropolitan areas. Although the Japanese were then entering a long peaceful period the SAMURAI still controlled public affairs in spite of the rapidly emerging merchant class. As a consequence of the artisan influence a natural grouping of city businesses developed and the brothel section of YANAGIMACHI, better known as YOSHIWARA, flourished. Various names have been given the feminine charmers and some authorities note that crowds were attracted by the YUJO or "play girls" who entertained with Noh plays and Kabuki plays as inducement to a brisk post-theater trade of another sort.⁴⁷

YOSHIWARA was a coined word, YOSHI meaning a small tough-fibered tree then abounding in the section and HARA meaning open plain.⁴⁸ Then as now the amusement center of EDO was at ASAKUSA, and when the profitable life of the courtesan encouraged an influx of YUJO or JORO from other sections the authorities attempted to control the situation by supervising a new brothel section called SHIN (new) YOSHIWARA. Prostitutes were brought in from NIHONBASHI and KYOTO and additional ones could always be obtained from among the HYAKUSHO or country girls nearby. The SHIN YOSHIWARA ward became a tightly controlled project and the sector head or heads were constantly on the alert to eliminate brothels operating outside the ward. Although JORO could be solicited from outside, those in the "guild" were not permitted to do business in other places. The JOROYA were ordinary utilitarian houses but the JORO were restricted to simple dyed kimonos, which they wore without the restrictive OBI girdle; guests of suspicious character were reported to the magistrate; and in no case was a guest supposed to be "detained" more than twenty-four hours.⁴⁹ Thus was free-lance soliciting curbed to the profit of the brothel keepers and the government, and the girls who lived and worked within the area, clearly marked by the red TORII gates of the Shinto sect, were virtual prisoners.⁵⁰

During the early days of YOSHIWARA the highest type of entertainers were the TAIYU, later known as OIRAN, of which there were allegedly only 3 among the 3778 JORO of the early period. The next in the social scale were the KOSHI-JORO, kept in houses with barred windows, and of whom there were only 57. The most popular priced group were the TSUBONE-JORO who conducted business in rooms similar to the living apartment of court ladies.⁵¹ Their names if not their profession varied with different periods in Japanese history and eventually the YOBIDASHI, the call-girls who entertained in the tea houses, became the highest class of JORO. Whether or not they are the forerunners of the GEISHA is a question for dispute.

According to some opinions the YOSHIWARA area prospered because of the merchants, the lowest of the four principal classes,* frustrated when their money failed to bring class distinction, became extravagantly pleasure loving as a release from their sense of UKIYOE or social defeat. ASAKUSA was famous for more than theaters and entertainment, for it abounded in food stalls and small restaurants which were noted for "the huge portions they served"⁵²—of special appeal to the hearty country people who made that area their city headquarters. The RYOKAN or Japanese inn has apparently always provided the YUKATABIRA or cotton after-bath kimono for guests to wear during their stay, so travelers carried few personal items and, more rarely, tooth-picks.

Among the many shrines in the ASAKUSA area was one, the ancient SENSOJI, dedicated to KWANNON, the goddess of mercy, and famous for a thriving business in therapeutic YOJI. And as was to be expected in a stylized society, especially one with the civic acumen to license prostitution, there was an aristocratic OIRAN YOJI as well as a YOSHIWARA YOJI, the latter sometimes called the KANBOKU YOJI

* Warriors, farmers, industrialists and merchants.



FIG. 6. Staining of teeth with Ohaguro.

and having both sides of the short, hard brush-like ends well beaten.

Blackening the teeth by application of an iron, gall nut and tannic acid mixture, warmed before use or by other stains such as betel nut and persimmon was a distinctively Eastern custom; it was practiced in Japan before the sixth century but went thru undulant periods of popularity. It was a tedious and time-consuming habit so in periods of war only the women kept the practice alive.⁵³ Called OHAGURO, in Japan, it was a badge of feminine maturity and usually of married status.

Black, in China, was a color of no rank, and as Buddhism deprived women of status there may have been subtle but servile meaning in this custom rather than the preferred interpretation of representing a wife's unchanging love for her husband or a warrior's devotion to one master, or a healthful treatment for the teeth. Although it had been a court custom since the beginning of the SHOTOKU Period, 593 A.D., as noted in an early treatise called the KAMI-ROKU,⁵⁴ the practice varied with the period. The TSUTSUMI CHUNAGON MONOGATARI (923-927 A.D.) notes that at the end

of the HEIAN Age (tenth century) it was generally affected by the upper classes. This was a period of unusual effeminacy in court circles and men not only practiced OHAGURO but followed the feminine style of shaving their eyebrows. For men this usually took place at the ceremony of adulthood, about age sixteen, when the tonsure or long hair was cut. The first OHAGURO ceremony for women usually occurred at the age of puberty rather than at the time of marriage; some women did not shave the eyebrows until pregnancy and then as an insurance for easy birth rather than for cosmetic reasons. During at least one of the periods in history the government forced women having induced abortions to shave their eyebrows as punishment. Women of rank were especially careful of their complexions, so much so that facial hair was abhorred and they are supposed to have used razors freely, a custom that doubtless gave rise to the many women barbers now found in Japan. In some sections only the numerical age of the woman controlled the first OHAGURO ceremony, which was not permitted in families of inferior status such as beggars and tanners, but in general it is conceded that the custom was an indication of matrimonial status.

Superstition played its part adroitly. Doubtless because the snake was the JUNISHI emblem of fertility as well as of jealousy, an old legend provides that at the time of female puberty a small blood pond forms under the areolar tissue of the breast.⁵⁵ In this pond there lives a small snake of unknown origin whose movements cause a discharge of blood—the menses. As soon as the snake begins to live in the pool the woman becomes jealous, and if its growth is unchecked it eventually will be able to devour all the men in the world.⁵⁶ Hence, Buddha, god, favored OHAGURO, which is poisonous to the snake, controls jealousy—and is therefore a simple means of salvation for timorous man himself. Men, the braver and stronger sex, must therefore have practiced OHAGURO either because

of its beneficial effect on teeth or because it was believed attractive.

Since both sexes practiced OHAGURO at times the ancients were a bit biased in assigning the snake only to women. They believed, nevertheless, that it could be killed off gradually if during a woman's life she consumed as much as 64.8 liters of black iron as a paste mixed with gall nut and water and applied daily to the inside of the teeth. Thus small quantities automatically would be swallowed while eating and drinking, with the snake eventually taking his measure and dying in the blood pond—the menopause. Whatever the correlation between the OHAGURO and feminine fecundity, the YOJI was an indispensable part of the procedure.

Ordinarily JORO were country girls and noted for having defective or unkept teeth. Some left home voluntarily but the majority⁵⁷ entered the brothels to discharge debts, their own or those of the family, scores that were seldom satisfied in full if they proved attractive to customers. Their occupation was viewed more tolerantly than in many more sex-conscious societies, and in the "early" days custom decreed their use of the toothdye—an advertisement, perhaps, of their knowledge of the more intimate facts of life. As described in the CHIYOKAGAMI (nd), the OHAGURO ceremony marked the first step toward this new life.⁵⁸ The materials, including the proper YOJI, were kept in special cosmetic boxes and on the appointed day, probably her JUNISHI animal sign but otherwise one determined by a fortune teller, the maiden faced in the direction of her lucky star, the constellation whose influence was considered operative since the year of her birth.

She was assisted by an "older sister," doubtless a married woman, who if she shaved or plucked the subject's eyebrows for the first time was called the KENUKI-OYA, or "hair-pulling mother."⁵⁹ A young virgin imitated the ceremony symbolically. The religious influence was present in that the OHAGURO ceremony represented the



FIG. 7. Saruya Tooth-Pick Shop.

candidate's new status as acceptable to BUDDAH; it was her means of getting rich; it was an indication that she would become an instrument of charm; it presumably strengthened the roots of the teeth; it obviated the risk of chest disease; it was a charm against future hard luck; as black was an unchanging color it indicated her staunch devotion to the laws of Buddah—God.⁶⁰

In contrast to the highest class of entertainer, the seldom found TAIYU, GEIKO or OIRAN, the GEISHAS, the world famous entertainers of later periods, are believed to have no predecessors prior to 1761, and the name was first used in the Kanto area. They were always saluted for their beauty and talent rather than dramatic ability or intelligence. The best of them were trained in rigidly controlled schools. Romantic traditions and practical custom differ on the real function of the GEISHA, that is whether her repertoire was confined strictly to singing, dancing and social conversation, for they are known to have required wealthy patrons or "sugar daddies" to provide their expensive clothing. Unlike the early clothing restrictions placed on the YUJO or JORO the GEISHA have long been renowned for their elaborate gold, silver and embroidered kimono and accessories.

Like the couturier of the Western world some of the more famous ones became arbiters of fashion. And like the Chinese beauties of old, admired for their exquisite

skin and lovely teeth, the GEISHA did not practice OHAGURO. Regardless of the interpretation some would place on their occupation, their gleaming teeth and their serene and carefully made up faces contributed to the fantasy that they possess special virtues of truthfulness and pure character. They were the heart-breakers of NIHON, the girls who turned men's thoughts away from the "little woman" of the functional oriental marriage to the fabulous tea houses of their day. But in time the tide of dental fashion turned. Married women, in defense perhaps, began abandoning dental stains by leaving the two front teeth untouched. By the end of the eighteenth century social customs had completely reversed and only the poor and the geographically isolated clung to the untidy habit.

Some Prefectures passed progressively early if ineffective legislation to prohibit the practice of OHAGURO, but as is often the case public opinion and masculine preference proved a stronger deterrent. In Formosa, then a Japanese province, soldiers so objected to visiting JORO with blackened teeth that the custom fell into disuse.⁶¹ This brought gradual extinction to the HANEYOJI, the FUDEYOJI and YANAGISEI YOJI, but their absence was not missed. The extremely modern and progressive Japanese dental education of the twentieth century not only has not castigated the toothpick, a subject of periodic social and professional controversy in the Western world, but "finger food" and culinary fads have turned manufacture of the blessed twig into a thriving export as well as profitable domestic enterprise. At the time of this writing there are listed twelve YOJI companies in Japan, the largest of which averages a 23 million Yen monthly income of which 15 million Yen represents domestic sales and 8 million Yen exports.

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EDITORIALS

Poliomyelitis

THE rapidly changing picture in poliomyelitis is a brighter one and for this America owes much to its scientists who have worked steadily, faithfully, and tirelessly in an effort to improve the treatment and more recently to develop vaccines for the prevention of this crippling disease.

For five years now we have had the Salk vaccine. Salk working on the discoveries of Enders developed the first recognized vaccine for poliomyelitis. This was a very definite step forward. The incidence of poliomyelitis in these United States in the past five years has been reduced and this year the incidence of paralytic polio has been about 50% of the median of the years since 1955. This is indeed a hopeful situation.

However, there is a group of our population that has not, for some reasons not clearly evident, been reached with the Salk vaccine. Is it the fear of the needle; is it the cost; is it just too easy to neglect to take the Salk vaccine? We must admit that with all the efforts to give due publicity to the need for the vaccine many people have not been reached.

Recently an improved Salk vaccine was developed. This is not yet being produced in large quantities where it might be expected to replace the original type of Salk vaccine. The method of administration will be the same—subcutaneously.

On the heels of this new type of Salk vaccine we have the Public Health Service's approval of an oral vaccine for poliomyelitis. Three types have for some years been made available for field trials, most of which have been done in foreign countries. One of these (Sabin) has been approved for production and use in the United States. It will be at

least a year before an appreciable amount of the live poliovirus vaccine will be available.

Can we then hope that the unvaccinated will avail themselves of protection against poliomyelitis since an easier and painless method will soon be available? Certainly not 100%. But the percent of the American population not vaccinated against poliomyelitis should become smaller after the oral vaccine is in production. Admittedly there will be problems in its distribution and use.

Along with these two types of vaccine there must be an educational program directed to the unvaccinated, particularly, to show them the advantages of immunization and the crippling likely from the disease. There will always be some who will not heed advice; there will always be some who will defy the rules of health and sanitation simply because they feel their rights are being infringed upon. Now with oral polio vaccine some of the reluctance to be vaccinated that has been manifested in the past few years may be overcome.

Our Annual Meeting

STOCKHOLDERS over the country have been flocking to the annual meetings of their companies recently. For what reason? It appears that they are showing more interest in the companies they have invested their money in because of reduced dividends on the stocks. They want to know the reasons. We need not speculate on those reasons here for that would not be pertinent to this editorial.

Our stockholders are our members. For them we have a dividend, in fact a bonus dividend. That is our annual meeting. Attendance at our annual meeting, October 31, November 1 and 2 will pay each of you well. So

be there to collect when the meeting opens.

A meeting such as the one we are having requires many hours of preparation on the part of many persons. It is difficult and sometimes unjust to cite any individuals since so many deserve credit. Yet, we would be doing two people an injustice by not mentioning their names here. They are Rear Admiral Curtiss W. Schantz, the General Chairman, and Captain Clifford P. Phoebus, the Scientific Program Chairman. Through their piloting we are assured of an outstanding meeting.

The program is printed in detail in another section of this journal. We suggest that you study this program carefully and convince

yourself that you should attend the annual meeting.

Bring the lady, too. As you see there are interesting events for her. She will not want for entertainment. Of course the traditional Ladies Luncheon is the gala affair and the highlight of their activities.

The Honors Night Dinner will complete the three day meeting. Those who have attended before know the splendor of the evening. Those who have not attended will want to be present at this grand affair.

So, stockholders (members) be with us October 31, November 1 and 2 at the Mayflower Hotel, Washington, D.C. And remember we welcome your guests, too.



YOUR DUTY AS A CITIZEN—GO TO THE POLLS AND VOTE—NOVEMBER 8

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Around the World

(Ser. III, No. 24)

By

CLAUDIUS F. MAYER, M.D.

XOCHIMILCO, the famous town with the floating gardens on its lake, and many other small and large *Mexican cities and villages* enjoy the beneficial results which come from the numerous sanitary and health projects promoted and financed by Pan American Health Organization and World Health Organization. In a recently issued account of the director of the Pan American Sanitary Bureau, it is mentioned that *malaria eradication* has made great progress in Mexico. In 1959 the third year of total coverage with insecticides was completed, which means much in the interruption of the transmission of malaria. Efforts are also being made to establish notification posts in all localities with 500 or more inhabitants. In collaboration with the Ministry of Public Health and Welfare of Mexico, a study is made of the *poisonous qualities of dieldrin* in malaria eradication. More than 3½ million houses were sprayed at least once, and thus about 17 million people are protected against malaria. Insecticides were used in millions of pounds (chiefly DDT, and some dieldrin also). The same insecticides are good also against the *Aedes aegypti* mosquito, and it is hoped that by next year this insect also can be completely eradicated from Mexico.

Mexico is one of the Latin American countries where *leprosy is endemic*. The prevalence rate of the disease is 42 per 100,000 inhabitants. No State in the Republic is exempt, yet there is an area of high leprosy rate (50 to 300 per hundred thousand inhabitants) in the shape of a *continuous belt along the Pacific Coast* (Sinaloa, Nayarit, Jalisco, Colima, and Michoacan) and turning inward toward the Atlantic. In this area there are about 7 million people among whom 10,424 cases of leprosy are known (which makes 76% of all lepers in Mexico). The rest of the country has an average leprosy rate of 10 per 100,000 inhabitants.

In spite of all the wonder drugs of modern pharmacy, it seems that leprosy is still far from being a curable disease. Yet, the World Health Organization's recent survey of "*International Work in Leprosy, 1948-1959*" states that it is a *curable disease*, thanks to the power of sulfa drugs. This is a hopeful statement after the centuries of fear and repulsion at the sight of a leper. There are still about 10 to 12 million lepers in the whole world, and many features of the disease are still obscure. We do not know the length of incubation, the pathway of infection, and we still dispute the present classification of clinical types of the disease. The registration of leprosy is also difficult since it is prevalent in the under-developed countries of vast areas; remote villages cannot be reached by any survey, and the patients themselves—in fear of an enforced isolation—are trying to hide their sickness as long as possible. The diagnosis of leprosy is not simple. It occurs in the form of many other skin diseases, and there is no reliable diagnostic test, yet. Hence, *no accurate estimate* can be made of the actual spread of leprosy.

Geographically, the world's *most important focus of leprosy is Asia*, and each of the Asian countries is contaminated with the disease. The whole of Africa is also infected with it, with a prevalence in the equatorial countries. Another major focus is South America. Europe is free from it, excepting Spain, Italy, and Malta. A few isolated cases are detected also in Finland, Iceland, and in other European countries. Leprosy is endemic, beside Mexico, in the Pacific Islands, and Australia has also some 1000 cases. In North America, the total number of *known* cases is 11,000. The present main weapon against leprosy is the DDS (4:4'-diaminodiphenylsulfone) which is given orally in bi-weekly doses, or in an ethyl-chaulmoog-rate suspension in bi-monthly injections. It is still

not the ideal drug, since it may cause toxic reactions; neither does it assure a cure in 100% of the cases. Leprosy should be placed legislatively into the same category as other communicable diseases, and dealt with as such by public health authorities.

Mental health in old age is a more and more urgent problem of our days. One factor in the mental health of the aged is the so-called *retirement* when many an elderly person tends to lose his sense of purpose, his habits and his self-respect. The sharp decline in income of most people on retirement brings hardship and loss of status, also a state of dependence. Old age pensions are very rarely adequate, and not all the old folks are covered by pension system. Hence, many retired persons become either a burden of their own prosperous children, or public burdens. To this comes the loneliness and boredom which retirement often brings. This, and the financial insecurity and the family tensions which it generates increase the chance that an old person becomes a load on the community's welfare and hospital services. The employment of people over 65 had steadily declined all over the world in this *Era of the Exaltation of Youth*.

The problem could not be entirely solved by *raising the retirement age*, since a good percentage of the older workers are physically unable to carry on their work. Yet, many excellent characteristics of the older worker make him useful, even for industrial work, where greater persistence, stability and more mature judgment are required. They can contribute skills in which long practice had made them expert. It is also a historically documented fact that the exceptionally gifted are relatively immune to the effects of aging. Of course, the retirement is more a problem in the lower social classes where the originally skilled worker is apt to drift down the scale to drudgery as a general laborer. There is clearly a great scope for the biological, medical, and sociological study of the mental and physical well-being in old age.

If we assume that the *definition of "epidemiology"* is the study of the distribution of diseases and their behavior under differing conditions of life in human communities, then

we may easily talk of the epidemiology of *any* disease, of mental diseases, at that. In this sense, epidemiology is almost the same as the "geography" of a disease, as geopathology. Immediately, it becomes a global study, and every global study requires an international agreement in reference to the exact meaning of terms to be used in the study. Hence, *epidemiology of mental disease* also must start with a revision of the international classification of diseases. Such a classification was published in a revised form in 1955 as a manual of the WHO (Geneva, 1955; 115p.). This classification is, however, not accepted by psychiatrists who are one of the *most stubborn branch of physicians* when it comes to a protest against categorization. Standardization of the diagnosis of mental disease is the most difficult problem. Thus, before any progress is made in the epidemiology of mental diseases, first a research has to be made into the actual methods of epidemiological research and into the possible ways of how to approach such problems as, for instance, the socio-cultural change in relation to the distribution of psychiatric disorders (e.g., how do stressful conditions influence entire people, or a whole nation?).

There is an isolated group of small islands 100 miles west of Scotland and 45 miles west of the nearest land in the *Outer Hebrides*. One of the foreboding islands is *St. Kilda*, and another is *Hirta*. Once these islands were populated but in 1930 the inhabitants abandoned the islands, and for more than twenty years, only birds, sheep, mice and the infrequent summer visitors disturbed the solitude. In 1957 the Royal Air Force landed to prepare an *observation post for guided weapon range on South Uist*, and in 1958 the British Army took over the responsibility for the Range. Once again, *Hirta*, the main island, becomes populated—as an Army post. Of course, there is not much traffic with the main land, yet about every ten days a passing Fleetwood trawler anchors in the bay, and brings the mail. Formerly, the only method of sending letters was by raft which the Gulf Stream then carried to Scotland.

Being a military post, *Hirta* is now pro-

vided also with a *medical center*. The usual problems of sick calls are injuries from rock clearing, from gales and from vehicles. Besides the medical officer, there is a sergeant and a nursing orderly, who also run the canteen, issue the rations, and supervise the messing. They are also the meteorologists who send three-hourly reports by radio to the nearest airport in the Hebrides; they are also the organizers of the postal service, and they also function as barbers. All the staff is familiar with the use of the Mountain Rescue Equipment and with the anesthetic apparatus. St. Kilda is the biggest seabird nesting colony in the British Isles.

At the meeting of the reserve medical officers at Dijon, France, the military governor of the region (General DESCOUR), called attention to the new method of warfare which does not require any invasion through frontiers, or any occupation of territories. It consists in the conquest of people, in violating the souls and in subjugating the spirits. This type of conflict has been called the "*revolutionary war*." According to the definitions of the French military regulations, this term is applied to the war doctrine which was worked out by the Marxist-Leninist theoreticians, and exploited by various revolutionary movements. These movements seized the power by progressively securing for themselves the physical and psychological control of the people by means of particular technics, relying upon mysticism and following a definite procedure. We can evaluate the effectiveness of the revolutionary war of *Marxism-Leninism* by comparing the present situation of the world with that of the year of 1945. In 15 years, 90 million Europeans, 600 million Chinese, and 500 million people at the near and far East fell under the domination of the communists. More than a billion people, 16 nations were absorbed without any effort that could be called a war in the classical sense.

As the Dijon general continued, we can hardly understand the revolutionary wars, especially those in Africa, unless we consider them as parts of the global revolutionary war of communism. We can also say that essen-

tially this war is the *confrontation of two different ideas about Man and World*, of two different civilizations:—the western civilization, and that form of civilization which is conceived by Marxism-Leninism. Or, with great simplification, we could say that, in the long chain of evolution of human thought, we came to a point where the world can be looked upon in two different ways. The first way comes to us by tradition, from the Greek culture at its peak, from the Law of the Romans, and from Christianity. This admits that there is a *truth which is outside Man*, which is not to be conceived, and which is transcendental to Man. The second way is relatively modern, grafted upon the Cartesian thought, further developed and transformed by the encyclopedists, by Kant and Hegel, leading to Marx and Engels, and from there to Lenin. For this second way, the *spirit is not outside the world*, and progress does not have its source in the human conscience, striving toward the Good and the True which influences man's action, but its source is in the *CONFLICT* of internal forces, in an internal and *creative CONTRADICTION* which is considered the first ground of evolution.

As General Descour explains, Lenin, taking hold of the thought of Marx and adopting the theory of war of Clausewitz, is the author of the *plan of a world-wide upheaval*, world-wide confusion which plan is looked upon by the Communists as a plan of genius, having been in further development during the past 40-50 years. The *international party of the communists* is thus a veritable Order in a religious (or rather antireligious) sense, a militant Order by definition, and the instrument to execute the plan of Lenin; it is the established apparatus for their conquest of the world. The *strategy has been well defined* by all the great theoreticians, Lenin, Stalin, Mao Tse Tung: "First, conquer Asia, then Africa, by-passing the Middle-East, which will lead us to the Atlantic and will make Europe indefensible. Then, either finish off the rest of Europe, or attack Central and South America. Once these have fallen, North America will be at our mercy, the nuclear

blackmail will undoubtedly suffice to make North America obedient to us". It is unfortunate—says the General—that the overwhelming majority of the non-communist people do not have any conception of the serious danger that threatens them. It is also unfortunate that, in Africa, France has been standing alone in recent years to defend the West.

In NORBOTTEN county in northern Sweden, an interesting study has been made to detect the differences in growth, ossification, antibody responses and serum electrolytes in infants who were fed with mother's milk, in contrast with infants who were fed with cow's milk. Norbotten County is situated at the Arctic Circle, and the infants were from the county district and a mining town. There were 660 children born in this county between June 1953 and December 1954. Of these, 402 were included in the nutritional study. They all received the same kind of nursing care, medical examinations, preventive medications. They were divided into four groups. Group I was composed of infants who had less than 2 weeks breast feeding; Group IV included infants who had 6½ months of breast feeding or more. There were a number of differences between these extreme groups. The artificially fed babies gained more weight and, first, they seemed to be taller. They also developed more ossification centers in their bones. Their hemoglobin percentage was lower, and their sedimentation rate was higher. No difference was seen in the behavior of infectious diseases, nor in the level of the immune bodies. The serum calcium levels in the exclusively breast-fed Group IV were significantly higher. The artificially fed infants, on the other hand, showed a higher level of serum phosphorus. The type of feeding had no influence on the time of eruption of the deciduous teeth, and there were no clear-cut differences in the overall incidence of caries among the feeding groups. The investigators pointed out that their findings about cow's milk refer to a specific formula only, and should not be applied to other types of cow's milk feeding.

Artificial insemination of women has been

questioned in recent years on many grounds. Opinions on its use are rather unanimous. Church-appointed committees recently agreed with the previous Christian judgment of the Archbishop of Canterbury's Commission (reported in 1948). A recent Committee, which prepared the *Church of England's evidence*, stated that insemination of the wife with her husband's semen may be justified. But, artificial insemination by a donor is wrong on theological, moral, and social grounds. Recommendation was made that legislation should declare its practice to be tantamount of "adultery or fornication." Even the opinion of the British medical profession considers this practice an undesirable one. In artificial insemination by donor the doctor arrogates himself a creative function which has always belonged to the married couple itself. The Church Committee actually suggests that the General Medical Council should regard it as unprofessional conduct for a medical practitioner to assist in the practice of A.I.D. (artificial insemination by donor).

Talking about artificial insemination reminds us of the phantastic report which a Russian (called Kvachaturian) submitted recently to the Soviet Academy of Sciences. He claims that he has been able to produce an artificial pouch, a sort of "artificial uterus" on the abdominal wall of a specially prepared pregnant donkey. The artificial uterus served as a receptacle for the grafting of embryos of dogs, rats, monkeys; the grafts were getting their blood-supply from the mother donkey's placenta through established vascular connections. The experimenter claims that the grafter embryos ripened to maturity. He also vaguely hints that his trials with grafting of human embryos into the artificial uterus were also successful, and four of such donkey-borne human infants are now well and alive!!

Much is being done for the promotion of sports among the youth of the Iron-curtain countries, especially in Germany which has traditionally been a country of organized sports. According to the recent figures, however, in spite of the official efforts, the enthusiasm for sports is gradually on the de-

cline in the youth of the German "Democratic" Republic; at least, fewer adolescent persons have enlisted in the sports organizations of East Germany in recent years than, let us say, in 1955. One reason for this is believed to be that the sports movement has lost its health character and preventive medical aspect. In every sports organization the prevention of disease should be in the center of gravity. Recent meetings of leading physicians in sports emphasized that the *preventive medical aspect* should again resume its previous dominance in the sports of young people. Less time and energy should be spent on developing champions and on peak achievements by a few stars in the world of physical culture, and more emphasis should be placed upon the sports of masses.

East Germany's living standard is increasing, and its industrial production is also going upwards. Nevertheless, more and more skilled workers try to escape from the "democratic paradise" through West Berlin. Among the *refugees*, a large proportion is of the *medical profession*. This leaves the East Germans with a *critical shortage of doctors* so that they encourage the immigration of physicians from the satellite countries, especially from Hungary, in the hope that thus a complete breakdown of the medical services can be prevented. The chief reason for the migration to the West is that East Germany rigidly pushes its program of rigorous socialism.

A French orchestra leader (Philippe Gérard) made a record on discs on which he tried to utilize the *human heart as a musical instrument*. In his opinion the human heart is beating in the rhythm of the rock-and-roll, but if the heart is put under pressure its rhythm becomes the *beat of "cha-cha-cha."* (This is quite a new pathway in the jungle of phonocardiography).

Hidden among the mountains of the *Upper Nile Province of deep Sudan*, a peculiar tribe of Noli-Hamitic Negroes, about 40,000 heads strong, is eking out a living. They are called the *Murle*. This tribe was slowly *dying out due to infertility*. The tribe used to

make raids upon the neighbors, stealing especially children and women. After the Sudan became a republic in 1955, several government experts were sent out to find out the cause of the tribe's infertility. First, a psychiatrist appeared, but he could not find anything wrong in the tribal customs, or in the taboos which would give an explanation of infertility. Next, a medical man was sent out from the Kitchener Medical School in Khartoum, which is a very good medical school of the Sudan. This doctor saw at once that *venereal diseases were the responsible agent of infertility*; he saw that many of the people suffered from them, especially from gonorrhea. Soon, the World Health Organization sent out its expert, with a team of injectors.

The head of this *treatment expedition* saw with alarm that 40% of the Murle had syphilis, and many more had gonorrhea. A wholesale treatment started with penicillin injections (4.8 million units for pregnant women, 2.4 million units for adults with active lesions, 1.2 million units to adults with no lesions, and to syphilitic children, 0.6 million units to a child with no lesion at all). Very soon, more than 20,000 persons (half of the tribe) were correctly treated. In the following years, there was a *new large crop of babies*, and the fertility of the tribe was brought up to normal level. The raids on the neighbors stopped, and the Murle continue living happily, living their existence of an *almost prehistoric culture*. They have few tools, and they buy iron only to make spear heads and shields. They live a communal life without private property. They have no idea of the future, and these people eat immediately everything that comes to hand so that when winter comes, they die of famine and pneumonia. But they are not afraid of death; indeed, not afraid of anything. To the man whom they honor they *give the title of "holy bull."* The WHO doctor who with his medical treatment brought renaissance to the tribe also became one of the few "holy bulls." . . . *Multa paucis!!*

NOTES

Timely items of general interest are accepted for these columns. Deadline is 1st of month preceding month of issue.

Department of Defense

Ass't Secretary (Health & Medical)—HON.
FRANK B. BERRY, M.D.

Deputy Ass't Sec'y—HON. EDW. H. CUSH-
ING, M.D.

SYMPOSIUM

The Second Forensic Sciences Symposium will be conducted at the Armed Forces Institute of Pathology, Washington, D.C., November 8-10.

The symposium will be composed of lectures, panels, and demonstrations of toxicological and other scientific methods used in criminal investigations. This symposium, like the first, is designed to indoctrinate and orient hospital commanders, base and post surgeons, legal officers, military police officers along the line of forensic sciences, to enable them to know when and how to utilize the pathologist, and how to better aid and assist one another in forensic cases.

Army

Surgeon General—LT. GEN. LEONARD D.
HEATON

Deputy Surg. Gen.—MAJ. GEN. THOMAS J.
HARTFORD

SURGEON GENERAL MEETINGS

October 13 opens the 1960-1961 series of meetings of the Surgeon General at the Walter Reed Army Medical Center. Lt. General Arthur G. Trudeau, Chief of the Research and Development of the Army, will be the speaker.

A series of four meetings will be held, the following three to be in December 1960 and February and April of 1961. All meetings are held at 8:00 P.M., at the Sternberg Auditorium, Walter Reed Army Medical Center, Washington. The third Thursday of the months cited are now scheduled for the remaining meetings of the series.

The meetings have always been highly informative and well attended.

DR. YOUMANS TO AMA

Dr. John B. Youmans who has been Technical Director of Research for the U. S. Army Medical Research and Development Command, Washington, D.C., has been named Director of the American Medical Association's Division of Scientific Activities.

During his professional career Dr. Youmans has been interested in nutrition. During World War II he served as Chief of the Nutrition Division of the Preventive Medicine Service in The Surgeon General's Office of the Army. After the war he became Dean and Professor of Medicine at the University of Illinois College of Medicine, and in 1949 returned to Vanderbilt University where he had been from 1927 to 1944.

In his new position Dr. Youmans will coordinate all scientific activities of the American Medical Association.

ASSIGNMENTS SGO

Lt. Colonel John A. Moncrief, MC, has been appointed Chief of the Surgical Research Branch of the U. S. Army Medical Research and Development Command. He succeeds Lt. Colonel Harold F. Hamit, MC, who has been assigned to Letterman General Hospital, San Francisco.

ASSIGNED SGO

Captain Kenneth K. Wheatley, MSC, was recently assigned to the Emergency Plans

Branch of the Medical Plans and Operations Division in the Office of the Surgeon General.

He just completed the regular course at the Command and General Staff College at Fort Leavenworth. During World War II he served with the 25th Infantry Division in the South Pacific, winning the Combat Medical Badge, Bronze Star with oak leaf cluster, Purple Heart, and Commendation Ribbon with oak leaf cluster. Since World War II he has done graduate work in law at the University of Texas.

CHIEF, TECH LIAISON SGO

Major Edward M. Strobel, MSC, was recently appointed Chief of the Technical Liaison Office in the Surgeon General's Office. He succeeds Major Basil W. Dano, MSC, who has been assigned to Headquarters, Sixth U. S. Army, San Francisco.

Major Strobel received his Master of Hospital Administration degree from Baylor University in August.

COMPTROLLER BAMC

Lt. Colonel Milton C. Devolites, MSC, a specialist in fiscal matters, has been assigned to the Brooke Army Medical Center as Comptroller. On arrival at the Center he was presented with the Army Commendation Medal for his service in a similar capacity with the 549th Hospital Center in Heidelberg, Germany.

HEADS VETERINARY DEPARTMENT

Colonel Curtis W. Betzold, VC, former Chief Veterinarian of the U. S. Army in Europe is now Director of the Department of Veterinary Science, Army Medical Service School, Fort Sam Houston, Texas.

Colonel Betzold entered the Army in 1934. All of his professional career has been spent in activities associated with food inspection and guaranteeing the quality of foodstuffs purchased for consumption by United States personnel.

DENTAL SURGEON, FIRST ARMY

Colonel Clare T. Budge, DC, has succeeded Colonel William T. Williams as Dental Surgeon of the First U. S. Army. Colonel Williams has been transferred to Fort Knox, Ky.

WASHINGTON RESIDENCE

Major General James M. Epperly, former Assistant Surgeon General and Chief of the Army Dental Corps, who retired from military service on July 31, will remain in Washington, D.C. The Eperlys live at: 5610 Marengo Road, Washington 16, D.C.

GOOD EATING

Nine young women, all 1960 graduates, received their commissions as second lieutenants in the Army Medical Specialists Corps Reserve recently at Brooke General Hospital, Fort Sam Houston, Texas. The ceremony was conducted by Brigadier General Robert B. Skinner, Commander of the hospital.



U. S. Army Photo

Left to right: BRIG. GEN. ROBERT B. SKINNER, MC, USA; SECOND LIEUTENANTS ROSEMARY ALIESCH, JESSIE S. BREWER, BEULAH M. COOPER, MARTHA B. COYLE, GLORIA D. DENKHUSE, CATHRYN C. FREEMAN, MARGARET E. RANGER, MARCIA L. TURPIN, and DOROTHY L. WOODIN.

The nine with ten others make up the Army's new class of dietetic interns. Eight of the class are now stationed at Brooke

General Hospital and the other eleven have been assigned to Walter Reed General Hospital in Washington.

MUD SLINGING

Mud slinging that is controlled on the potter's wheel may be the partial answer to the treatment of some psychiatric patients. So believes Private Peter Couchman of Brooke General Hospital, Fort Sam Houston, Texas.

Private Couchman is a male registered occupational therapist, a 1959 graduate of California San Jose State College and a prior employee of the Methodist Hospital of Southern California before coming to the Army.

With the clay creations probably many psychiatric cases can satisfy the urge to bring into reality some of their imaginative beings. Imagination has no limits.

OLYMPIC TEAM PHYSICAL THERAPIST

Captain Celeste Hayden, AMSC, Brooke General Hospital, Fort Sam Houston, Texas, is the only woman physical therapist yet to serve with the U. S. Olympic Team. She accompanied the 1960 team to Rome.

This is not her first experience, either, with an Olympic Team. In 1956 she served as a civilian physical therapist when the team went to Australia. That position she won by her own efforts when she suggested that



U. S. Army Photo

Left to right: MAJ. EMILY FAIRBANKS, CAPT. CELESTE HAYDEN, CAPT. BERNARD MCELROY.

the team needed a physical therapist. She also served with the U. S. Army in the United States and the South Pacific during World War II.

MALE NURSES

The first male officers of the Army Nurse Corps recently attended the advanced military nursing course given at the Army Medical Service School, Fort Sam Houston, Texas. The course is for training nursing



U. S. Army Photo

COL. LIU YUN-TING; 1ST LT. JOHN GEHRINGER (lower right); 1ST LT. FRANK T. MAZIARSKI (upper left); and 1ST LT. VINCENT J. WARGO.

service personnel in administrative and supervisory procedures, in-service training programs, and human relations.

Colonel Liu Yun-Ting, former nursing representative in the Office of the Surgeon General of the Chinese Nationalist Army on Taiwan also attended the course.

DIRECT COMMISSIONS IN RA

Civilian dietitians, physical therapists, and occupational therapists when meeting certain qualifications, may now receive direct commissions in the Regular Army. Previously they were required to serve in the Reserve before becoming eligible for Regular Army Commissions.

RETIRED

Major General James P. Cooney, MC,

retired from military service on August 31, after more than 33 years active duty. His last assignment was Surgeon, U. S. Army Forces, Europe. He is now Vice President for Medical Affairs for the American Cancer Society, 521 West 57th Street, New York 19.

RETIRED

Colonel George E. Leone, MC, retired on August 31, after more than 31 years active military service. His most recent assignment was Surgeon of the Fifth U. S. Army.

Colonel Leone has received an appointment from the New York State Department of Health as District Health Officer, Jamestown, New York. His address in that city will be 601 Hotel Jamestown Bldg.

WWI COMBAT VETERAN RETIRES

Lt. Colonel Horace W. Doty, Medical Corps, U. S. Army, a combat veteran of World War I, retired on August 31. For the past three years he has been Post Surgeon and Hospital Commander at Fort Stewart, Georgia.

Colonel Doty enlisted as a private in 1917, and served with the 13th Field Artillery Regiment, which was part of the original 4th Division. On his return from Europe, after serving in the Aisne-Marne, Vesle River, St. Mihiel and Meuse-Argonne operations, he returned to school, earned his BS degree from the University of Idaho, and his M.D. from the University of Chicago in 1930. In World War II he served as a medical officer in the Southwest Pacific. He was relieved of active duty in 1946, but recalled in 1948, and then integrated into the Regular Army.

BECOMES MAYOR

Major General Guy B. Denit, MC, USA, Ret., was elected on June 6, 1960, to be Mayor of the town of Marion, Virginia, where the Denits have been residing since his retirement from the Army.

He assumed office September 1. During the last week of August he attended the biennial Institute for Councilmen and

Mayors sponsored by the League of Virginia Municipalities, and held at the University in Charlottesville, Va.

ELECTED SURGEON ROA

Colonel Carl J. Schopfer, MC, of the 114th Surgical Hospital (MA), New Jersey National Guard, was recently elected Surgeon of the Reserve Officers Association of the U. S. Department of New Jersey.

THE "A" FRAME

The centuries old Korean device for carrying heavy loads provided a means of transportation for wounded in Korea during the Korean Conflict. It is known as the "A" frame. It is comprised of forked limbs that are roped together. In Korea native grasses woven into rope are used.



U. S. Army Photo

Left to right: CAPT. KIM HAK YOHNG, 1ST LT. CHOE JONG SUK, 1ST LT. LEE THAE UK.

A sturdy model of the "A" frame has been presented to the Army Medical School, Fort Sam Houston, Texas, by General Johng Hui Sup, Surgeon General of the Korean Army. That Army has now developed a special litter to use with the frame. The litter can also be used for a two or four man carry.

REPRINT AVAILABLE

"Eye Injuries in Modern Industry" by Colonel Roland I. Pritikin, MC, USAR, is available in a reprint form (original article

in *Medical Trial Technique Quarterly*). Write to: Callaghan & Co., 165 N. Archer Ave., Mundelein, Ill.

Navy

Surgeon General—REAR ADM. BARTHOLOMEW W. HOGAN

Deputy Surgeon General—REAR ADM. EDWARD C. KENNEY

SELECTED FOR FLAG RANK

Two Medical Corps and one Dental Corps officers were recently selected for flag rank and when vacancies occur will be promoted to the grade of Rear Admiral. They are Captain Harold J. Cokely, MC, USN, Commanding Officer of the U. S. Naval Hospital, St. Albans, N.Y.; Captain Langdon C. Newman, MC, USN, Commanding Officer of the U. S. Naval School of Aviation Medicine, Pensacola, Florida; and Captain Eric G. F. Pollard, DC, USN, Commanding Officer, U. S. Naval Dental School, National Naval Medical Center, Bethesda, Maryland.

EXECUTIVE DIRECTOR, INTERNATIONAL COLLEGE OF SURGEONS

Rear Admiral Walter F. James, Medical Corps, U. S. Navy, Retired, has been named Executive Director of the International College of Surgeons, effective July 1, 1960. He succeeds the late Rear Admiral Ross T. McIntire.

Admiral James retired from the Navy Medical Corps on June 27, 1960, with more than 34 years service.

ASSIGNMENTS BUMED

Recent assignments in the Bureau of Medicine and Surgery, Department of the Navy, are:

Captain Ernst R. Moeller, MC, USN, as Head, Assignment and Distribution Section, Medical Corps Branch.

Commander Jack W. Millar, MC, USN, as Director of the Preventive Medicine Division.

Commander Louie K. Witcofski, MSC,

to be Director of the Hospital Corps Division.

Lieutenant Commander John W. Ethridge, MSC, USN, as the Assistant for Navy Materiel, Planning and Logistics.

Lieutenant Commander Russell E. Hunter, MSC, USN, as Head, Career Planning and Distribution Branch, Medical Service Corps Division.

Lieutenant Commander John M. Hook, MSC, USN, to be Head, Management Improvement Branch, Hospital Administration Division.

Lieutenant Commander Charles H. Miller, MC, USN, for duty in the Communicable Disease Branch, Preventive Medicine Division.

Lieutenant Charles A. Schehl, Jr., MC, to the Physical Qualifications and Medical Records Division.

AFIP ASSIGNMENT

Captain Louis S. Hansen, DC, USN, was recently designated as Chief, Dental and Oral Division of the Armed Forces Institute of Pathology, Washington, D.C. He succeeds Major General Joseph L. Bernier, DC, U. S. Army, who is now Assistant Surgeon General and Chief of the Dental Corps, U. S. Army.

RECEIVES DECORATION

Captain Edward A. Anderson, MC, USN, senior medical officer at the U. S. Naval Air Station, Quonset Point, Rhode Island, recently received the highest decoration of the U. S. Volunteer Life Saving Corps at a special meeting in Wickford, R.I.

Doctor Anderson has with the assistance of volunteer Navy personnel helped in the mass vaccination of Rhode Islanders with the Salk vaccine. Using pistol shaped, rapid firing vaccine injection guns which deliver 1200 painless inoculations an hour. Doctor Anderson and his staff of volunteers have inoculated more than 100,000 persons in Rhode Island. The vaccine was provided by the State Department of Health and repacked at the Naval Air Station hospital so that it could be used in the "hypo-spray"

guns. This in itself was a tremendous job which required meticulous handling. Then the trips on off duty hours had to be made.

This is not the first time that Doctor Anderson has been engaged in this sort of work. He received the Navy Commendation Ribbon in July for his work in combating a yellow fever epidemic in the Sudan.

Those associated with Doctor Anderson in the Rhode Island project were: Lieutenant (jg) Roy W. Tandy, Jr., MSC, USN; and hospital corpsmen Richard A. Cusick, Adrian Lee, Donald McGuire, and Ronald Rasmussen.

RETIRED

Captain Lloyd B. Shone, MC, USN, who had been Director of the Preventive Medicine Division of the Bureau of Medicine and Surgery retired from the Navy August 1, after more than 30 years active service.

During World War I he was an enlisted Pharmacist's Mate. He is one of the few Navy Doctors, who in addition to his Doctor of Medicine degree, holds a Doctor of Dentistry degree, having graduated from Harvard Dental School in 1923.

Other officers retired recently were: Captains Mark S. Curtis, Ferold Lovejoy, John M. Murphy, Harold J. Rickard, John C. Traugh, all of the Medical Corps.

Officers of the Medical Service Corps who recently retired were: Commander Arthur T. McCarley, Lieutenant Commander D. G. Stallbories, and Lieutenant Commander K. E. North.

COLLEGE CREDIT FOR HOSPITAL ADMINISTRATION COURSES

Successful completion of courses at the Naval School of Hospital Administration, National Naval Medical Center, Bethesda, Maryland, will be accepted for credit on college degrees awarded by George Washington University, Washington, D.C.

Credits earned in the 10-month course will be considerably more than normally earned in a typical college year.

The arrangement for this credit was approved by the Surgeon General of the Navy

and the Acting President of the University.

Commander C. F. Johnson, Medical Service Corps, U. S. Navy, is the present Commanding Officer of the Naval School of Hospital Administration.

Air Force

Surgeon General—MAJ. GEN. OLIVER K. NIESS

Deputy Surg. Gen.—MAJ. GEN. JOHN K. CULLEN

ASSIGNMENTS SGO

Recent assignments to the Office of the Surgeon General, U. S. Air Force are:

In Directorate of Medical Staffing and Education of which Colonel L. A. Smith, Medical Corps, is Director: Major Alonzo M. Donnell, Jr. Medical Corps.

In the Directorate of Plans and Hospitalization of which Brig. General R. T. Jenkins, Medical Corps, is Director: Colonel Joseph E. Hodges, Medical Corps; Lt. Colonel Raymond E. James, Medical Service Corps, Lt. Col. Bernard Young, Medical Service Corps, and Major Downing A. Bolls, Medical Service Corps.

In the Directorate of Professional Services of which the Director is Brig. General A. L. Jennings, Medical Corps: Colonel Robert E. Nurnberger, Medical Corps, as Deputy Director; Lt. Colonels William Marette, Kenneth N. Morese, Carl L. Hansen, Jr., and Richard K. Miller; Majors Williard Hawkins, Wilbert H. McElvin, Myron R. Smith. All are of the Medical Corps.

NURSE PROCUREMENT OFFICER

Major Janice A. Albert, USAF, NC, recently reported to the Office of the Surgeon General of the Air Force and has been designated to be in charge of the Air Force Nurse Procurement Program. She is a flight nurse and served in that capacity in World War II and again in the Korean Conflict when she assisted in the evacuation of the wounded from Korea to Japan.

MOUNTAIN CLIMBER

Captain Thomas O. Nevison, USAF, MC, of the Air Force School of Aviation Medicine, Brooks Air Force Base, Texas, has joined the party of Sir Edmund Hillary on the expedition to Mount Makalu, Nepal.

In 1958, Dr. Nevison was physician on the American expedition which climbed the 26,470 foot Gasherbrum I, or Hidden Peak, in Nepal.

This 31-year-old physician has been a mountaineer since 1947. He has scaled peaks in the United States, Canada, and Alaska, and has several first ascents in Canada to his credit. He served as President of the Harvard Mountaineering Club during his college days.

In Nepal the party will gather data on the body reactions to height, and the respiratory effects of rarefied atmosphere. There are two other physicians in the party as well as an anthropologist, a glaciological team, a photographer, cartographer, and zoologist.

PRESIDENT-ELECT, SANITARIANS

Lt. Colonel V. Harry Adrounie, USAF, MSC, was recently elected President-Elect of the National Association of Sanitarians. He is the Environmental Medicine Officer, Aerospace Medicine Division, Office of the Surgeon General, and is also the Air Force member of the Executive Committee of the National Association of Sanitarians.

Colonel Adrounie is a board certified sanitarian, a Fellow of the Royal Society of Health, and a member of the International Association of Milk and Food Sanitation.

Public Health Service

Surgeon General—LEROY E. BURNEY, M.D.
Deputy Surg. Gen.—JOHN D. PORTERFIELD, M.D.

STATEMENT OF SURGEON GENERAL BURNEY
ON LIVE POLIOVIRUS VACCINE (ORAL)

On August 24, Dr. Leroy Burney, Surgeon General of the U. S. Public Health Service, issued the following statement regarding live poliovirus vaccine:

"During recent months, a number of conferences have been held at which progress in the field of immunization with live poliovirus vaccines was reported. These conferences include the meeting held in Moscow in May, the joint Pan American Health Organization-World Health Organization Conference held in Washington in June, and the 5th International Congress on Poliomyelitis held in Copenhagen in late July. The staff of the Public Health Service and its Advisory Committee on Live Poliovirus Vaccine has given careful consideration to the information available from these meetings—indeed, some members have actively participated in these meetings.

"It may be recalled that about a year ago recommendations relating to the manufacture and testing of live poliovirus vaccines were issued to facilitate the entry of interested manufacturers into this complex field. Last week, the Committee met with the manufacturers and other interested persons in order to review these recommendations.

"Revisions to these earlier recommendations, which will serve as the basis for adoption of regulations for manufacturing and testing of the vaccine, have been agreed on by the Committee. These include the virus strains to be used, the general process of manufacture to be followed, tests to be applied during manufacture, and factors relating to the continued safety, purity, and potency of the vaccine.

"The Service's Division of Biologics Standards is moving with all speed to complete technical details of the final regulations while the manufacturers proceed with preliminary steps toward meeting these requirements. These details will be available in the near future.

"In addition, I have received a general short report from the Committee, a copy of which is attached. On the basis of these recommendations, it is considered that live poliovirus vaccine is suitable for use in the United States. It is now possible to visualize the licensing of the establishment of manufacture and sale of these products when the

manufacturers have individually demonstrated the necessary experience and ability to produce material which conforms with the requirements.

"It is not anticipated that the vaccine will be available in any quantity for a number of months and it is doubtful whether substantial supplies will be available before mid-1961. In any case, I consider it important to note the Committee's recommendation for the integrated use of the live polio vaccine with the presently available vaccine and for the rather special requirements concerning use of live poliovirus vaccine in the American population. I shall take up certain of the problems raised by the Committee regarding the optimal use of live poliovirus vaccine in the United States with appropriate advisory groups, such as the State and Territorial Health officers and representatives of the medical and health professions and of the voluntary health agencies"

COMMITTEE OF LIVE POLIOVIRUS VACCINE REPORTS

The Public Health Service Committee on Live Poliovirus Vaccines, established in June 1958, made a report to the Surgeon General of the Public Health Service after a meeting held on August 19, 1960. Some of the important points in that report are recorded here:

"The Committee feels that three factors when considered together make possible its recommendation regarding strain selection. These factors are: (1) Neurovirulence in monkeys, (2) Viremia in man, and (3) Field experience with all candidate strains. The Committee again emphasizes the need for definitive information on the question of viremia in man."

"The Committee considers that of the strains available for preparing live oral poliovirus vaccine the Sabin Type I and Type II strains possess the most favorable laboratory and field characteristics and recommends their use. The Committee also recommends the use of the Sabin Type III strain which is satisfactory from the point

of view of neurovirulence although it has less than optimum immunogenic capacity and shows a tendency to change its neurovirulence characteristics after passage in man. The Committee urges the continued search for a superior Type III strain. All candidate strains other than those of Sabin which have been studied extensively are of greater neurovirulence for monkeys than the selected reference."

"The Committee expresses the view that neurovirulence for monkeys is the most important laboratory criterion available."

"The Committee took cognizance of the great contributions of Dr. Cox and Dr. Koprowski, who with their colleagues promulgated the concept of live oral poliomyelitis vaccine and using their own attenuated strains, provided much of the crucial information which advanced the development of this new vaccine."

"The Committee concludes that the field data now available indicate that while good levels of immunity can be obtained under certain conditions such levels can only be assured by repeated doses."

"Because of the unique nature of live poliovirus vaccine, with its capacity to spread the virus in a limited manner to non-vaccinated persons, the Committee cannot make recommendations for manufacture without expressing concern about the manner in which it may be used. The seriousness of this responsibility can be illustrated, for example, by the known potentiality of reversion to virulence of live poliovirus vaccine strains, and the possible importance of this feature in the community if the vaccine is improperly used."

The Committee on Live Poliovirus Vaccine is composed of the following persons: Roderick Murray, M.D., *Chairman*; David Bodian, M.D.; William McD. Hammon, M.D.; Alexander D. Langmuir, M.D.; Joseph L. Melnick, Ph.D.; and John R. Paul, M.D.

NATIONAL LIBRARY OF MEDICINE

The Director of the National Library of

Medicine, Dr. Frank B. Rogers, resigned his commission in the U. S. Army as of July 31, and on August 1 became a member of the Commissioned Corps of the U. S. Public Health Service.

Construction of a new building on the grounds of the National Institutes of Health, Bethesda, Maryland, is under way. The building is one-third completed and dedication is expected in 1961.

A slip from the plane tree on the Dodecanese island of Cos, under whose shade Hippocrates is reputed to have taught his students, is being nurtured at the Agricultural Research Services Glenn Dale Nurseries. The slip will be planted later on the grounds of the National Library of Medicine.

HEALTH STATISTICS CENTER

A National Center for Health Statistics has been established in the Public Health Service. This new organization will bring together the major Public Health Service activities concerned with measurement of the health status of the Nation and identification of significant associations between characteristics of the population and health-related problems. There will be two divisions: the U. S. National Health Survey and the National Office of Vital Statistics.

NURSE TRAINEESHIP PROGRAM

Nurses interested in administration, supervision and teaching may wish to have the revised publication, *Facts About the Professional Nurse Traineeship Program*, (PHS Publ. No. 520, Revised), and the two supplements, Schedules A and B.

The publication outlines provisions of the traineeship program and eligibility requirements for applicants. It includes supplemental lists of schools of nursing and public health, and other agency sponsors, by type of program offered, which had been approved for traineeship grants on or before June 20, 1960.

Copies may be obtained from the Division of Nursing Resources, Public Health Service, Washington 25, D.C.

RETIRED

Dr. Nathan B. Eddy, research pharmacologist at the National Institutes of Health for the past 21 years, recently retired from the U. S. Public Health Service. He was 70 years of age.

He is a recognized authority on drug addiction and analgesics. In recent years his office had come to be the world clearinghouse for information concerning all aspects of narcotics, analgesics and addiction. With Dr. Everette L. May of the National Institute of Arthritis and Metabolic Diseases, he recently synthesized phenazocine (NIH 7519), a potent new analgesic which is a more effective pain-killer than morphine but has fewer side effects and is less liable to produce addiction.

Dr. Eddy will continue as a consultant to the National Institutes of Health.

COURSES IN EMERGENCY SERVICES

Four national courses to train medical and health personnel for emergency services will be held by the U. S. Public Health Service and the Office of Civil and Defense Mobilization.

Tuition and housing are provided without cost to students and approximately one-half the necessary travel expenses can be reimbursed through OCDM student training expense funds. Enrollments are limited. Applications should be made through State Civil Defense Directors.

Courses scheduled are:

1. HEALTH MOBILIZATION PROGRAM FOR EMERGENCY HOSPITAL MANAGEMENT, December 4-9, 1960, OCDM Eastern Instructor Training Center, Brooklyn, New York. (Course carries professional endorsement of the American Hospital Association.)
2. NURSING ASPECTS OF HEALTH MOBILIZATION, April 23-28, 1961, OCDM Staff College, Battle Creek, Michigan.
3. ENVIRONMENTAL HEALTH ASPECTS OF HEALTH MOBILIZATION, April 23-28, 1961, Battle Creek, Michigan. (Courses

2 and 3 held concurrently to permit joint sessions in some subjects.)

4. HEALTH SERVICES ASPECTS OF HEALTH MOBILIZATION, May 7-12, 1961, OCDM Eastern Instructor Training Center, Brooklyn, New York.

Further information on training courses and other Health Mobilization activities may be obtained from State Health Departments or Civil Defense Offices, or from Regional Offices of either the Department of Health, Education, and Welfare or Office of Civil and Defense Mobilization.

TRAINING IN CANCER

For the purpose of advanced training of physicians in the diagnosis and treatment of cancer the Public Health Service has awarded 143 grants, totaling \$1,059,401 to teaching hospitals and medical research centers in the United States.

The institutions receiving the grants set the stipend and name the individuals to be trained. Trainees are graduate physicians under 40 years of age who have had at least one year's work in a field related to cancer.

RADIOLOGICAL TRAINING COURSE

The Public Health Service will train approximately 900 health workers, mostly municipal, State and Federal, in Fiscal Year 1961 in subjects pertaining to radiological health.

The Surgeon General of the Public Health Service has pointed out the acute shortage of qualified persons in this field of radiological health. There is a need now for such personnel and as the years pass the need becomes greater.

Physicians, engineers, and physicists trained in radiological subjects will be needed in greater numbers because of the expansion of the industrial uses of such equipment.

MILK SAMPLING STATIONS

In 1957 the Public Health Service established the first milk-sampling stations in the United States for measuring the radiation levels in milk. Since that time there has been

an increase in the number of these stations until now there are 59 with coverage in 47 states, the District of Columbia and Puerto Rico.

Dr. Leroy Burney, Surgeon General of the Public Health Service said, "Milk was chosen since it is among the most important elements in the diet and is constantly available at all seasons and in all climates."

The results of the milk tests are tabulated and published in a monthly technical journal, "Radiological Health Data," published by the Public Health Service.

The average measurements of strontium-90 in milk, in micromicrocuries per liter, during the period February 1959 through January 1960, ranged from 3.4 for Overton, Nevada, to 22.4 for Saint Louis, Mo. Dr. Burney pointed out that these averages were well within the level of 33 micromicrocuries per liter or kilogram for water, milk, and foods recommended as a guideline by the National Committee on Radiation Protection and the International Commission on Radiation Protection.

FLUOROSCOPES

Dr. Leroy Burney, Surgeon General of the Public Health Service, has said that at least 33 States and the District of Columbia have either banned the use of X-ray fluoroscopes for shoe fitting or have adopted strict regulations for such devices. In the hands of untrained personnel these machines are a definite hazard.

CANCER MONOGRAPH

The proceedings of the Conference on Experimental Clinical Cancer Chemotherapy held in Washington on November 11 and 12, 1959, are now available in printed form as *National Cancer Institute Monograph No. 3*. Copies can be procured from the Superintendent of Documents, Government Printing Office, Washington 25, D.C. Price per copy is \$2.00.

FILM CATALOG

Films available from the Film Library, Communicable Disease Center, Public Health

Service (as of June 1, 1960) are listed in the *Film Catalog* (PHS Publ. No. 776). The price of the catalog is 50¢ and is available from the Superintendent of Documents, Government Printing Office, Washington 25, D.C.

The majority of the films are technical in nature and are produced for the training and instruction of professional personnel in public health techniques.

Veterans Administration

Chief Medical Director—WILLIAM S. MID-
DLETON, M.D.

Deputy Chief Med. Dir.—H. MARTIN
ENGLE, M.D.

VETERAN STATISTICS—JULY 1960

Veteran population in civil life: 22,526,000
(July 1959—22,657,000)

World War I: 2,664,000 (July 1959—
2,769,000)

Average daily patient load in hospitals:
112,096,000 (July 1959—112,078,000)

Outpatient visits: 195,650 (July 1959—
190,150).

3D STUDY OF LUNG DISEASES

Three dimension study of lung tissue which offers a better approach to the anatomy and pathology of the organ, has been developed by joint studies of Dr. Hollis G. Boren and Dr. Bernard J. Blumenthal of the Houston (Texas) Veterans Administration hospital and Baylor University College of Medicine, and Dr. William Hentel and Dr. A. N. Longfield of the Albuquerque (N.M.) VA hospital.

A formaldehyde vapor is passed through the lung for five days during the time fixing occurs. To prevent deflation and shrinkage of the lung, as well as to allow complete drying, air alone then is passed through the lung for an additional seven days.

The specimens obtained are dry, rigid, non-fragile, and inflated to a size closely approximating the living state. They may be studied almost in their entirety by cutting

sections which can be viewed by stereoscopic microscopy or more conventional means.

The four Veterans Administration doctors were awarded the Billings Bronze Medal for their scientific exhibit on the work, "Pathology of Major Pulmonary Diseases as Demonstrated by Fume Fixation," at the recent Annual Meeting of the American Medical Association.

PARKINSON'S DISEASE

Parkinson's Disease also known as paralysis agitans, and by some referred to as "shaking palsy" is a disease that affects about one-half million people of the older age group in the United States.

A medical team under the leadership of Dr. Blaine S. Nashold, Jr., neurosurgeon at the Durham, North Carolina, Veterans Administration Hospital, is investigating the effects of drugs on the course of the disease.

The studies at Durham, Dr. Nashold explained, "are attempts to discover certain basic mechanisms in the brain by injection into that organ of specific drugs which have heretofore been suspected of affecting the neural processes." The drugs used are injected into the globus pallidus and thalamus.

HONORED

Dr. Clifton O. Dummett, Chief of the Dental Service, Veterans Administration Hospital, Tuskegee, Alabama, was honored with the "Outstanding Dentist of 1960" award at the recent annual meeting of the National Dental Association held in St. Louis.

His military service was with the U. S. Air Force serving at Elmendorf Air Force Base, Anchorage, Alaska, as Chief of Periodontia, Base Preventive Dentistry Officer, and consultant in periodontics to the Alaskan Air Command. He continues in the Air Force Reserve, at present holding a commission of Lt. Colonel.

A graduate of the Northwestern University Dental School, he has specialized in periodontia, is a Diplomate of the American Board of Dental Examiners, American

Board of Periodontology, and the American Board of Oral Medicine.

Miscellaneous

VETERINARIANS CONFERENCE

The Conference of Public Health Veterinarians will hold its 1960 scientific sessions and a Dinner Session and business meeting in conjunction with the Annual Meeting of the American Public Health Association in San Francisco, October 30 to November 3.

President of the Conference is Dr. Robert K. Anderson, Professor of Veterinary Bacteriology and Public Health in the College of Veterinary Medicine and School of Public Health, University of Minnesota.

The Secretary-Treasurer is Dr. Joe W. Atkinson, National Institutes of Health, Laboratory Aids Branch, DRS, Bethesda, Maryland.

Colonel Mervyn B. Starnes, VC, USA, is President-Elect of the Conference.

RADIOLOGICAL SCIENCE

A Department of Radiological Science, headed by Dr. Russell Morgan, has been established at Johns Hopkins University. As pointed out elsewhere in this journal there is a great need for specialists and researchers in the field of radiological science.

FOLIC ACID

The Food and Drug Administration on August 26 affirmed its July 13 position to classify vitamin preparations containing more than 0.4 milligram of folic acid per daily dose as drugs which must be labeled for sale only upon prescription.

It is known that folic acid though not harmful in itself has been known to mask symptoms of pernicious anemia.

IMMUNIZATIONS

A new schedule for active immunization of infants and children recommended by The American Academy of Pediatrics:

1½ to 2 months—D.P.T. and polio vaccine.

3 months—D.P.T. and polio vaccine.

4 months—D.P.T. and polio vaccine.

10 months to 12 months—Smallpox vaccine.

12 to 18 months—D.P.T. and polio vaccine.

3 to 4 years—D.P.T. and polio vaccine.

5 to 6 years—Smallpox vaccine.

8 years—D.T. (adult type) and polio vaccine.

12 years—D.T. (adult type) and polio vaccine.

16 years—D.T. (adult type) and polio vaccine.

After that? The military services will have a program.

MEETING

The American College of Gastroenterology will hold its 25th Annual Convention at the Bellevue-Stratford Hotel in Philadelphia, Pa., on October 24-26. Following this meeting the College will give its Annual Course in Postgraduate Gastroenterology (27, 28, and 29 October).

PG COURSES ON DISEASES OF CHEST

Clinical Cardiopulmonary Physiology, a postgraduate course, will be held at the Sheraton Towers Hotel, Chicago, October 24-28.

Recent Advances in the Diagnosis and Treatment of the Heart and Lungs, a postgraduate course, will be held at the Park Sheraton Hotel, New York City, November 14-18.

The above courses are held by the American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Ill.

GOVERNMENT SURPLUS PROPERTY

"Science teachers have picked up approximately \$60 million worth of such equipment, and there is every indication that the rate is increasing," says Secretary of Health, Education, and Welfare Arthur S. Flemming.

The Department's Surplus Property Division, with the cooperation of the Office of

Education, has prepared a guide to surplus property items commonly available which can be used successfully in science teaching.

Government surplus property of all types suitable for schools, hospitals and nonprofit institutions can often be obtained at no cost to these institutions.

Regional Offices of the Department of Health, Education, and Welfare and various State agencies channel the surplus property to these institutions upon application by them.

REPORT AVAILABLE

The Effects of Radiation on Oxygen Designed for Human Consumption (PB 161 551) is a 37-page report; price \$1. Available from the U. S. Department of Commerce (Publications and Public Information Div.), Washington 25, D.C.

WATER RESOURCES

Washing machines and dishwashers may be a boon to home owners but they are a drain on existing water utility facilities. Nevertheless, Americans are currently allocating only half the money needed to keep abreast of burgeoning water demands.—*Wooden Barrel*, Associated Cooperage Industries of America.

New Members

Ensign Nancy E. Riecks, NC, USNR
Lt. (jg) Thomas J. Pallasch, DC, USN
Major James G. Lee, MSC, USAR, Inac.
Capt. Jewel B. Harper, MSC, USAR
Lt. Col. A. Cahill Charles, USAR, DC
Major Donald Cowley, MSC, USAR
Capt. Carl W. Forsyth, MSC, USAR
Lt (jg) Hazel Irene Faust, NC, USNR
Lt. (jg) Edna Joyce, NC, USNR
Lt. Doris M. Kiely, N, USNR-R
Lt. M. Frances Liu, NC, USN
N.O. Eugenia J. McClure, USPHS-R
Lt. Ruth E. Montgomery, NC, USN
LCdr Elizabeth M. Murray, NC, USN
Lt. Marion M. Seabury, NC, USN
Lt. Fred Benoit, MC, USN

LCdr Hazel McGrath, NC, USNR
Capt. Edward C. McKeon, MC, USAR
Cdr. Emma E. Urgitis, NC, USNR-R
Lt. Col. John R. Ramey, MC, USAR
LCdr. Virginia C. Burke, NC, USNR
Lt. (jg) Norma Deane Neth Hickey, NC, USNR-R
Lt. Kathryn M. Hart, NC, USNR
Edna V. Mitchell
Capt. Robert J. T. Joy, MC, USA
Major Drusilla Poole, ANC, USA
Ens. Helen B. Cornwell, NC, USNR Ret.
Lt. (jg) Alice K. Felton, NC, USNR
Laura Markut, NC, USNR Inac.
LCdr Mary P. Molloy, NC, USNR
Capt. J. R. Armstrong, Jr., MSC, USAR
Capt. Rupert Q. Bliss, DC, USAR
LCdr. Joyce J. Hoover, NC, USN
LCdr. P. Jane Kuenzi, NC, USN
LCdr. Dee L. V. Lawson, NC, USN
LCdr. Waunie L. Shelton, NC, USN
Lt. Margaret M. Smith, NC, USNR
Lt. Ednoa P. Wharton, NC, USNR, Ret.
LCdr. Phyllis L. Bohnoff, NC, USNR
Brig. Gen. L. Render Braswell, USAF, MC
Lt. Col. Thomas E. Brown, USAR, VC
LCdr. Martha H. Kelly, NC, USNR, Ret.
Lt. Lonnie F. Leonard, MC, USN
Lt. Irma M. Morichelli, NC, USNR
Lt. (jg) Catherine Serafin, NC, USN
Cdr. Anna M. Sims, NC, USNR-R
Lt. (jg) Cena B. Troutman, NC, USNR
Lt. Doris M. Woodward, NC, USNR
Major Don R. Bowers, VC, AUS
LCdr. Annabelle Sickman, NC, USN
Capt. Karl G. Klinges, MC, USAF
LCdr. Mary P. Richards, NC, USNR
Capt. George W. Russell, MC, USN
Lt. Col. Wofford E. Baldwin, MC, USAR
Lt. Fran Bryan, NC, USN
Freda M. Hosfelt, R.N.
Lt. John A. Ungersma, MC, USN
1/Lt. Robert E. Burney, II, USAF, MC
Lt. (jg) Regina H. Slys, NC, USNR, Ret.
Lt. (jg) Patricia Parkins, NC, USNR
LCdr. Thomas W. Turner, MC, USN
Capt. Paul W. Peeples, MC, USAR
Lt. Col. Clifford T. Meacham, DC, USAR
Lt. Col. A. B. Kamine, VC, USAR

LCdr. Jane Holliday, NC, USNR-R
CMSW Clarence A. Murphy, MSC, USN
Lt. Richard L. Vaught, MC, USN
Lt. (jg) Evelyn Yvonne Blake, NC, USNR
LCdr. Joan Marie Coughlan, NC, USN
Lt. Wanda J. Humphrey, NC, USNR
LCdr. Faye J. Slate, NC, USN
1/Lt. Claude L. Lollar, Jr., MSC, USA
A Surg. Walter P. Savage, USPHS-R
Capt. Emil P. Taxaig, MC, USAF
Capt. Van Tyle Burnette, VC, USAR
Lt. (jg) Patricia Collins, NC, USNR
Lt. (jg) Rhea F. Ferrari, NC, USN
LCdr. Helen B. Fitzgerald, NC, USNR
Capt. Charles A. Mitchell, MC, USAR
Capt. Charles R. Nussbaumer, DC, USA
Lt. Col. W. D. Pearson, DC, USA, Ret.
Col. Conrad Earl Albrecht, PARNG SS
LCdr. Annabelle B. Gillmann, NC, USN
Col. Bernard Korn, MSC, USAF
Capt. Jerre Lancaster Noland, MSC, USAR
Lt. Edith A. Prencipe, NC, USN
LCdr. Helen Jane Shields, NC, USNR
Capt. John J. Rieder, MC, USN

MEMBERSHIP COMMITTEE

Commander Calvin F. Johnson, MSC, U. S.
Navy, Chairman
Mr. George F. Archambault, U. S. Public
Health Service
Commander Burdette M. Blaska, NC, U. S.
Navy

Lt. Col. Jesse W. Brumfield, MSC, U. S.
Army
Lt. Col. Nathan Cooper, U. S. Air Force,
(MSC)
Mr. Vernon O. Trygstad, Veterans Adminis-
tration

Since the publication of our last list, the following sponsored one or more applicants for membership in the Association:

Honor Roll

Major Ken Purpus, MSC, USAF-R
Erving F. Geever, M.D.
LCdr. Pauline J. Kuenzi, NC, USN
Col. Henry I. Berman, MC, USAF-R
Lt. Col. Nathan Cooper, USAF, MSC
Col. T. Craig McKee, MC, PA, NG
Rear Adm. Richard A. Kern, MC, USNR
Major Nan L. Porter, USAF, NC
Mrs. M. Marian Wood
Capt. Alfonsa F. Sandoval, DC, USA
Brig. Gen. David E. Meyer, MC
Col. John Brady, MC, USAR
Col. Joseph Hirsh, MSC, USAR
Lt. Col. Theodore C. Marrs, Ala., ANG
Curtis Artz, M.D.
Lt. Col. Douglass Lindsey, MC, AUS
Col. Robert L. Cavanaugh, MC, USA
Lt. Col. Arthur J. Levens, MC, USA
Vernon O. Trygstad, VA
Capt. William M. Snowden, MC, USN
Lt. Col. Ruth L. Greenfield, ANC



Late News

ARMY

Major General William E. Shambora, MC, USA, retired from the Army on September 30 after more than 35 years service. His most recent assignment was Commanding General of the Brooke Army Medical Center, Fort Sam Houston, Texas. General and Mrs. Shambora will reside in San Antonio, Texas.

The Commanding General of Fitzsimons General Hospital at Denver, Colorado, Carl W. Tempel, recently received his second star. He had been Director of Professional Services in the Office of the Surgeon General prior to his assignment at Fitzsimons.

Brigadier General Robert E. Blount who received his star on September 1, has assumed the position of Director of Professional Services, Office of the Surgeon General.

Brigadier General Clinton S. Lyter assumed command of Walter Reed General Hospital on September 15. His prior assignment was Commanding General of William Beaumont General Hospital, El Paso, Texas.

Major General C. F. St. John is now Commanding General of the Walter Reed Army Medical Center. The Walter Reed General Hospital, the Walter Reed Army Institute of Research and the Armed Forces Institute of Pathology are located at the Center. Major General John F. Bohlender who was previously Commanding Officer of Fitzsimons General Hospital is now Commanding General of the Brooke Army Medical Center, Fort Sam Houston, Texas.

NAVY

The Surgeon General of the Navy will hold two seminars for the Commanding offi-

cers, or their representatives, of Naval Reserve Medical Companies. One of the meetings will be held at the Bureau of Medicine and Surgery, Washington, D.C., from November 7-9, and the other at Headquarters, 9th Naval District, Great Lakes, Illinois, from November 14-16.

Captain Clifford P. Phoebus, MC, USN, will leave Washington for his new assignment as Commanding Officer of the Naval School of Aviation Medicine, Pensacola, Florida.

Captain George W. Hyatt, MC, USN, a well known Navy Orthopedist has resigned his naval commission to become Professor of Surgery at Georgetown University, Washington, D.C.

AIR FORCE

Dr. Howard A. Rusk, Scarsdale, New York, has been named by the Chief of Staff, U. S. Air Force, to fill an Air Force Reserve Mobilization assignment as Deputy for Reserve Affairs to the Air Force Surgeon General. He is an Air Force Reserve Brigadier General.

PUBLIC HEALTH SERVICE

A Surgeon General's Committee on Poliomyelitis Control has been formed. Heads of 23 organizations are being asked to serve on the committee.

VETERANS ADMINISTRATION

Dr. Sydney Selsenick, who has been director of professional services at the Veterans Administration Hospital, West Haven, Conn., has been appointed manager of the Veterans Administration Hospital at Boston, Mass.

*Be Sure
to Attend . . .*

THE 67TH
ANNUAL MEETING
OF THE
ASSOCIATION OF
MILITARY SURGEONS
OF THE
UNITED STATES

MAYFLOWER HOTEL
WASHINGTON, D.C.

OCTOBER 31,
NOVEMBER 1 AND 2

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PROGRAM
AWAITS YOU
- MEET OLD FRIENDS
- MAKE NEW FRIENDS
- PROFIT WHILE YOU
RELAX

PROGRAM
67TH ANNUAL MEETING
ASSOCIATION OF MILITARY SURGEONS
OF THE UNITED STATES

Mayflower Hotel
Washington, D.C.

October 31, November 1 and 2, 1960

THEME—"THE MILITARY ROLE IN MEDICAL PROGRESS"

Everyone Invited—No Registration Fee
Reserve Retirement Credit Points

REAR ADMIRAL RICHARD A. KERN, MC, USNR, RET., PRESIDENT

SUNDAY, OCTOBER 30

1:00-5:00 P.M.—*The Registration Desk will be open for those who may wish to register before the meeting opens.*

MONDAY, OCTOBER 31

8:30-9:00 A.M.—*Band Concert*

9:00 A.M.—*Opening Ceremony*

Address by President of the Association

9:30 A.M.—*Address*

Dr. Detlev Bronk, President of the National Academy of Science

10:00-12:00—*Panel of Chiefs of Federal Medical Services*

Dr. Frank Berry, Assistant Secretary of Defense (Health and Medical)

Lt. Gen. Leonard D. Heaton, The Surgeon General of the Army

Rear Admiral Bartholomew W. Hogan, The Surgeon General of the Navy

Maj. Gen. Oliver K. Niess, The Surgeon General of the Air Force

Dr. Leroy E. Burney, The Surgeon General of the Public Health Service

Dr. William S. Middleton, The Chief Medical Director of the Veterans Administration

12:00 NOON—*Lunch*

1:15-1:45 P.M.—*Annual Business Meeting of the Association
Report of Secretary
Election of Officers*

2:00-4:30 P.M.—*"Lessons Taught the United States by Mobilization for War"*

James M. Musser, M.D., Director of Research Service, Dep't. of Medicine and Surgery, Veterans Administration, Washington, D.C.

Modern Free Escape From Submarines

Cdr. G. F. Bond, MC, USN, Naval Medical Research Laboratory, New London, Conn.

Defensive Aspects of Biological Warfare

Col. William D. Tigertt, MC, USA, Army Biological Warfare Laboratories, Fort Detrick, Md.

Armed Forces Institute of Pathology Experience in Aircraft Accident Investigation 1956-1960

Col. Frank M. Townsend, USAF, MC, Director, Armed Forces Institute of Pathology, Washington, D.C.

The Prevention of Heat Casualties

Capt. David Minard, MC, USN, Naval Medical Research Institute, Bethesda, Md.

The Medical Problems Encountered in Antarctica

Capt. E. E. Hedblom, MC, USN, U. S. Naval Medical School, National Naval Medical Center, Bethesda, Md.

TUESDAY, NOVEMBER 1

9:00-10:00 A.M.—*Evaluation and Uses of Psycho-Pharmacological Drugs*

J. F. Casey, M.D., Director, Psychiatry and Neurology Service, Veterans Administration, Washington, D.C.

Recent Developments in the Treatment of Hypertension

Louis Gillespie, M.D., National Institutes of Health, Bethesda, Md.

The Use of Frozen Tailored Blood

Capt. Lewis L. Haynes, MC, USN, U. S. Naval Hospital, Chelsea, Mass.

10:00 A.M.—*The Sustaining Membership Lecture—"Aging and Medical Progress Through Research"*

The Honorable John E. Fogarty, Member of Congress from Rhode Island

11:00 A.M.—*Ceremony to Honor International Delegates*

12:30 P.M.—*The International Luncheon*
Speaker: Surgeon Captain Frank P. Ellis, British Naval Mission, Washington, D.C.

2:00 P.M.—*The William S. Porter Lecture*
Manfred S. Guttmacher, M.D., Chief Medical Officer of the Medical Service of the Supreme Bench of Baltimore

3:00-4:30 P.M.—*Panel on Cholera*

Moderator: Joseph E. Smadel, M.D., National Institutes of Health, Bethesda, Md.
Members: Kenneth Goodner, M.D., Professor of Microbiology, Jefferson College, Philadelphia, Pa.

LCdr. Raymond H. Watten, MC, USN, Medical Research Unit No. 2, Taipei, Taiwan
Capt. Eugene Gangarosa, MC, USA, Walter Reed Army Institute of Research

WEDNESDAY, NOVEMBER 2

9:00 A.M.-12:00 NOON

Application of Missile Range Technical Support to Military Medicine

Capt. C. E. Pruett, MC, USN, Pacific Missile Range, Point Mugu, Calif.

Operational Toxicology in the Navy

Cdr. J. Siegel, MSC, USN, Navy Toxicology Unit, National Naval Medical Center, Bethesda, Md.

Aeromedical Support of the X-15 Program

Lt. Col. Burt Rowen, USAF, MC, Air Force Flight Test Center, Edwards Air Force Base, Calif.

The Navy's Hearing Conservation Program

Dr. J. D. Harris, Naval Medical Research Laboratory, New London, Conn.

Management of Tuberculosis Patients in the Army

Brig. Gen. Carl W. Tempel, MC, USA, Commanding General, Fitzsimons General Hospital, Denver, Colo.

Achievements of Thoracic Surgery

Brig. Gen. James H. Forsee, MC, USA, Commander Medical Research and Development Command, U. S. Army, Washington, D.C.

Laboratory Medicine in Support of Military Medical Care

Col. Robert L. Cavanaugh, MC, USA, 2nd U. S. Army Medical Laboratory, Ft. George G. Meade, Md.

Current Concepts of Management of Snakebite

Lt. Thornton W. Merriam, Jr., MC, USNR, Naval Medical Field Research Laboratory, Camp Lejeune, N.C.

12:00—*Luncheon*

2:00-4:30 P.M.—*Panel: Man and The Radiation Hazard*

Moderator: W. E. Chamberlain, M.D., Associate Director, Research Service, Department of Medicine and Surgery, Veterans Administration, Washington, D.C.
Members: Rear Admiral C. B. Galloway, MC, USN

Col. G. L. Heckuis, USAF, MC
Major J. F. Culver, USAF, MC
Major R. W. Zelmer, USAF, MC

Cdr. W. McFarland, MC, USN
Clinton C. Powell, M.D.

Wednesday Evening, November 2

HONORS NIGHT DINNER

PRESENTATION OF AWARDS

The Sir Henry Wellcome Medal and Prize	The Sustaining Membership Award
The Gorgas Medal	The Andrew Craigie Award
The Major Louis Livingston Seaman Prize	The Founder's Medal
The Stitt Award	Federal Nursing Service Award
The McLester Award	

SECTION MEETINGS

MONDAY, OCTOBER 31

2:00 P.M.

PHARMACY and MEDICAL SERVICE
CORPS SECTION

NURSES SECTION

*Symposium—The Federal Services Role
in Nursing Progress*

1:00 P.M.—GREETINGS

Captain Ruth A. Houghton, NC, USN, Director, Nursing Division, Bureau of Medicine and Surgery, Department of the Navy, Washington, D.C., Chairman, Nurse Corps Section, Association of Military Surgeons.

1:10 P.M.—INTRODUCTIONS

Presiding: Commander Mary C. Grimes, NC, USNR, Head, Nurse Corps Reserve Liaison Branch, Bureau of Medicine and Surgery, Department of the Navy, Washington, D.C.

1:20 P.M.—*Factors Affecting Nurse Staffing
in a Federal and Non-Federal General
Hospital*

Eugene Levine, Ph.D., Chief Statistical Analysis Branch, Division of Nursing Resources, U. S. Public Health Service, Washington, D.C.

2:10 P.M.—*Professional Leadership and the
Federal Nursing Services*

Major Drusilla Poole, ANC, Instructor, Department of Nursing Science, Army Medical Service School, Brooke Army Medical Center, Fort Sam Houston, Texas.

2:50 P.M.—*Break*

3:00 P.M.—*The Navy Nurse and
Nuclear Power*

1. "The Problem of Nuclear Submarines"
LCdr. J. H. Ebersole, MC, USN, Radiology Department, U. S. Naval Hospital, National Naval Medical Center, Bethesda, Md. (Former Medical Officer, USS Sea Wolf)
2. "Nuclear Age and Nursing Technology"
LCdr. L. Simon, NC, USN, Head, Nuclear Nursing Division, Department of Nuclear Medicine, National Naval Medical Center, Bethesda, Md.

TUESDAY, NOVEMBER 1

VETERINARY SECTION

2:30-4:30 P.M.—*Call to Order and
Opening Remarks*

C. D. Van Houweling, Chairman, Program

Committee of the Veterinary Section
Welcome Remarks

Brig. Gen. J. A. McCallam, Chairman, Veterinary Section of the Association of Military Surgeons-U.S.

The Safety of Our Foods

M. R. Clarkson, Associate Administrator, Agricultural Research Service, U. S. Department of Agriculture

Foreign Animal Disease Threats

Col. F. D. Maurer, Chief, Veterinary Path-

ology Division, Armed Forces Institute of Pathology, Washington, D.C.

Respiratory Infections of Poultry Observed During Inspection

G. S. McKee, Head, Pathology Section, Inspection Branch, Poultry Division, Agriculture Marketing Service, U. S. Department of Agriculture

The Development and Production of Live Virus Vaccines

Charles J. York, Pitman-Moore Company, Indianapolis, Ind.

Recognized Methods of Humane Slaughter (Illustrated)

K. F. Johnson, Chief Staff Officer for Humane Slaughter, Meat Inspection Division, Agricultural Research Service, U. S. Department of Agriculture.

MEDICAL SPECIALIST CORPS SECTION

2:30-4:00 P.M.

Presiding: Lt. Col. Myra L. McDaniel, AMSC, Projects Officer for AMSC History, The Historical Unit, U. S. Army Medical Service, Walter Reed Army Medical Center, Washington, D.C.

Medical and Health Problems Associated With the Operation of Nuclear Submarines

Capt. G. J. Duffner, MC, USN, Director, Submarine Medicine Division, Bureau of Medicine and Surgery, Department of the Navy, Washington, D.C.

The Management of Mass Casualties

Major Dolores Gunuskey, ANC, USA, Department of Atomic Casualties Studies, Walter Reed Army Institute of Research, Walter Reed Army Medical Center, Washington, D.C.

WEDNESDAY, NOVEMBER 2

SUSTAINING MEMBERSHIP SECTION

Presiding: Brig. Gen. John R. Wood, MC, USA, Ret. Chairman, Sustaining Membership Section; Vice President, Burroughs Wellcome & Co. (U.S.A.) Inc., Tuckahoe, New York.

9:00 A.M.—*Presentation of the President and President-Elect of the Association of Military Surgeons of the U.S.*

9:30 A.M.—I. *The Health Mobilization Program of the U. S. Public Health Service*

Moderator: Dr. Carruth J. Wagner, Medical Director, Chief, Division of Health Mobilization, U. S. Public Health Service, Washington, D.C.

"What is Past is Prologue"

Dr. Robert Leslie Smith, Deputy Chief, Division of Health Mobilization, USPHS

"The Current Status of the Stockpile Program"

David S. Brunson, Chief, Stockpile Management Branch, Division of Health Mobilization, USPHS

Discussion Period

"Future Plans"

Dr. Richard L. Hayes, Assistant Chief, Division of Health Mobilization, USPHS

Discussion Period

10:15 A.M.—*Break*

10:30 A.M.—II. *Military Medical Procurement*

"Current and Proposed Procurement Policies of the Military Medical Supply Agency"
Discussion Period

11:15 A.M.—III. *Pharmaceutical Industry-Government Relations in the Veterans Administration*

"Industry-Professional Relations"

Vernon O. Trygstad, Director, Pharmacy Service, Department of Medicine and Surgery, Veterans Administration, Washington, D.C.

"Industry-Supply Relations"

W. W. Anderson, Chief Operations Section, Purchase and Contract Division, Department of Medicine and Surgery, Veterans Administration, Washington, D.C.

Discussion

12:00 NOON—*Invitational Luncheon for Sustaining Members and Their Guests, followed by Business Meeting*

DENTAL SECTION

Presiding: Dr. George C. Paffenbarger, Senior Research Associate, American Dental Association; Material Section, National Bureau of Standards, Washington, D.C.

9:00 A.M.—*Introductions*

9:15 A.M.—*Exfoliative Cytology in Oral Diagnosis*

Dr. George W. Greene, Jr., Oral Pathologist, Veterans Administration, Washington, D.C.

9:50 A.M.—*The Impact of Military Dental Care on Oral Health*

Cdr. Gordon H. Rovelstad, DC, USN, Research and Sciences Division, Clinical Services Department, U. S. Naval Dental School, National Naval Medical Center, Bethesda, Md.

10:40—*The Role of Prevention in Military Dentistry*

Col. Thomas A. McFall, DC, USA, Director, Division of Dentistry, Walter Reed Army Institute of Research, Walter Reed Army Medical Center, Washington 12, D.C.

11:25 A.M.—NOON—*What Federal Services Have Done To Educate The Public About Dentistry*

Dr. Nathan Kohn, Jr., Director, NK and Associates, Inc., 9827 Clayton Road, St. Louis, Mo.

SCHEDULE OF EVENTS FOR LADIES

SUNDAY, OCTOBER 30

1:00 P.M.—5:00 P.M.—REGISTRATION
MAYFLOWER HOTEL

MONDAY, OCTOBER 31

8:30 A.M.—2:30 P.M.—REGISTRATION
MAYFLOWER HOTEL

1:00 P.M.—TOUR TO TURKISH EMBASSY
GUIDED TOUR OF CAPITOL

Trip on underground train to New Senate Office Bldg. Tea in Senate Dining Room (Tours by chartered bus)

TUESDAY, NOVEMBER 1

12:00 NOON—Ladies Luncheon at Arlington Towers Terrace (offering a choice scenic

panorama of Washington), Arlington, Va. Reception for Honored Guests. Favors and Door Prizes. Skit presented by Navy Doctors Wives' Club Chorus. "Georgetown Couturier Fanfare" (Fashion Show) Presented by Rita Cover. Chartered bus service)

WEDNESDAY, NOVEMBER 2

9:15 A.M.—TOUR TO ANNAPOLIS,
MARYLAND

Guided tour—"Historic Annapolis"

12:30 P.M.—Luncheon at Officers' Club; arranged for by U. S. Naval Hospital wives. Tour of U. S. Naval Academy. (Chartered bus service)

SCIENTIFIC EXHIBITS

ARMED FORCES INSTITUTE OF PATHOLOGY

Exhibit: "Armed Forces Institute of Pathology"

Exhibitor: Colonel Frank M. Townsend, USAF, MC, Director AFIP

Exhibit: "Normal and Pathologic Anatomy of the Neuromuscular Junction"

Exhibitors: Colonel Joe M. Blumberg, MC, USA; Captain Sumner I. Zache, MC,

and Development Command

USA; Captain Walter Bauer, MC, USA.

ARMY

Exhibit: "Teaching Aid in Army Nursing"

Exhibitor: Army Nurse Corps

Exhibit: "New Materials for Combat Support"

Exhibitor: U. S. Army Medical Research

NAVY

Exhibit: "Preventive Psychiatry in the Navy"

Exhibitor: Bureau of Medicine and Surgery

AIR FORCE

Exhibit: "Resuscitation"

Exhibitor: Major Richard Ward, USAF, MC, Lackland Air Force Base, Tex.

Exhibit: "Self-Aid Buddy Care Training Kit"

Exhibitor: Major John Taylor, USAF, MC

U. S. PUBLIC HEALTH SERVICE

Exhibit: "Hospital Services Tailored to Meet Patient Need"

Exhibitor: U. S. Department of Health, Education, and Welfare, Public Health Service

Exhibit: "Radiation—A Growing Public Health Problem"

Exhibitor: Division of Radiological Health, Public Health Service

VETERANS ADMINISTRATION

Exhibit: "Rehabilitation of the Long Term Chronic Patient in the Veterans Administration"

Exhibitors: A. B. C. Knudson, M.D., and F. J. Schaffer, M.D.

Exhibit: "Tests for Oral Drug Utilization"

Exhibitor: S. William Simon, M.D.

TECHNICAL EXHIBITORS

Abbott Laboratories, North Chicago, Ill.
(Booth 1)

Alderson Research Laboratories, Inc., Long Island City, N.J.
(Booth 62)

American Cyanamid Company, Surgical Products Div., Danbury, Conn.
(Booth 46)

American Sterilizer Company, Erie, Pa.
(Booth 37)

Ames Company, Inc., Elkhart, Ind.
(Booth 56)

Astra Pharmaceutical Products, Inc., Worcester, Mass.
(Booth 40)

Ayerst Laboratories, New York, N.Y.
(Booth 47)

Baxter Laboratories, Inc., Morton Grove, Ill.
(Booths 29 & 30)

Becton, Dickinson & Co., Rutherford, N.J.
(Booth 22)

Brewer & Company, Worcester, Mass.
(Booth 20)

Charles Bruning Company, Inc., Washington, D.C.
(Booth 7)

Burroughs Wellcome & Co. (U.S.A.) Inc., Tuckahoe, N.Y.
(Booth 50)

Cameron Surgical Instruments Company, Chicago, Ill.

(Booth 10)

Chesebrough-Pond's, Inc., New York, N.Y.
(Booth 35)

Chilean Iodine Educational Bureau, Inc., New York, N.Y.
(Booth 17)

Ciba Pharmaceutical Products Inc., Summit, N.J.
(Booth 49)

The Coca-Cola Company, Atlanta, Ga.
(Special area)

Continental Laboratories, Inc., Palo Alto, Calif.
(Booth 8)

Cutter Laboratories, Teterboro, N.J.
(Booth 18)

Desitin Chemical Company, Providence, R.I.
(Booth 55)

Doho Chemical Corporation, New York, N.Y.
(Booth 23)

Eaton Laboratories, Norwich, N.Y.
(Booth 21)

Fenwal Laboratories, Somerville, N.J.
(Booth 31)

E. Fougera & Co., Hicksville, N.Y.
(Booth 32)

Geigy Pharmaceuticals, Yonkers, N.Y.
(Booth 41)

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| Hollister, Inc., Chicago, Ill.
(Booth 16) | A. H. Robins Company, Inc., Richmond, Va.
(Booth 5) |
| Industrial Acoustics Company, Inc., New York, N.Y.
(Booth 54) | Roche Laboratories, Nutley, N.J.
(Booth 51) |
| Lederle Laboratories, Pearl River, N.Y.
(Booth 57) | J. B. Roerig and Company, New York, N.Y.
(Booth 26) |
| Eli Lilly and Company, Indianapolis, Ind.
(Booth 60) | Sandoz Pharmaceuticals, Hanover, N.J.
(Booth 27) |
| J. B. Lippincott Company, Philadelphia, Pa.
(Booth 39) | R. P. Scherer Corporation, Detroit, Mich.
(Booth 11) |
| Lloyd Brothers, Inc., Cincinnati, Ohio
(Booth 34) | Schering Corporation, Union, N.J.
(Booth 36) |
| McNeil Laboratories, Inc., Philadelphia, Pa.
(Booth 53) | G. D. Searle & Co., Chicago, Ill.
(Booth 61) |
| Mead Johnson & Company, Evansville, Ind.
(Booth 13) | Smith Kline & French Laboratories, Philadelphia, Pa.
(Booth 45) |
| Medtronic, Inc., Minneapolis, Minn.
(Booth 19) | Stephenson Corporation, Red Bank, N.J.
(Booth 4) |
| Merck Sharp & Dohme, West Point, Pa.
(Booths 58 & 59) | Stiefel Laboratories, Inc., Oak Hill, N.Y.
(Booth 14) |
| The Wm. S. Merrell Company, Cincinnati, Ohio
(Booth 33) | Tailby-Nason Co., New York, N.Y.
(Booth 12) |
| Micro X-Ray Recorder, Chicago, Ill.
(Booth 2) | The Upjohn Company, Kalamazoo, Mich.
(Booth 38) |
| E. Miltenberg, Inc., New York, N.Y.
(Booth 6) | Warner-Chilcott Laboratories, Morris Plains, N.J.
(Booths 43 & 44) |
| Parke, Davis & Company, Detroit, Mich.
(Booth 3) | The Warren-Teed Products Company, Columbus, Ohio
(Booth 15) |
| Pfizer Laboratories, Brooklyn, N.Y.
(Booth 48) | Westwood Pharmaceuticals, Buffalo, N.Y.
(Booth 24) |
| Picker X-Ray Corporation, Washington, D.C.
(Booth 52) | Wilmot Castle Co., Rochester, N.Y.
(Booth 25) |
| R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
(Booth 9) | Winthrop Laboratories, New York, N.Y.
(Booth 28) |
| | Wyeth Laboratories, Philadelphia, Pa.
(Booth 42) |

MEDICAL FILM PROGRAM

Medical Films will be shown on each day of the Meeting. A list of the films to be shown will be made available later.

COMMITTEES FOR THE 67TH ANNUAL MEETING

General Chairman

REAR ADMIRAL C. W. SCHANTZ, DC, USN

Assistants to General Chairman

CAPTAIN E. G. F. POLLARD, DC, USN

CAPTAIN W. R. STANMEYER, DC, USN

Scientific Program

CAPTAIN CLIFFORD P. PHOEBUS, MC, USN

—Chairman

COLONEL LOUIS ARNOLDI, USAF, MC

COLONEL ALBERT J. GLASS, MC, USA

DR. LUTHER L. TERRY (USPHS)
DR. F. J. SCHAFFER (VA)

Scientific Exhibits

MR. HERMAN VAN COTT—*Chairman*
COLONEL JOE M. BLUMBERG, MC, USA
MR. JAMES J. CULHANE (USPHS)
MR. L. PAUL FLORY (VA)
CAPTAIN ROBERT V. SCHULTZ, MC, USN
COLONEL DON S. WENGER, USAF, MC
MAJOR F. M. LOVELL, USAF, MC

Technical Exhibits

MR. STEVEN K. HERLITZ—*Chairman*

Registration and Reception

COMMANDER BURDETTE M. BLASKA, NC,
USN—*Chairman*
MISS SUZANNE DZIAK (VA)
MAJOR ETHEL A. HOEFLY, USAF, NC
MAJOR JEANNE M. TREACY, NC, USA
LT. CHARLOTTE R. STONE, NC, USN

Dinners and Luncheons

COLONEL AUDREY A. UNDERKOFER, USAF,
MSpC—*Chairman*
LT. COMMANDER ELIZABETH O'MALLEY,
MSC, USN
MAJOR BRUNETTA K. GILLET, AMSC
(Ret.)
MRS. HELEN R. CAHILL (VA)
MISS FLORENCE S. LINDUFF (VA)
PHARM. DIR. MILTON W. SKOLAUT,
USPHS

Ceremonies and Entertainment

CAPTAIN FRANK T. NORRIS, USN—*Chairman*
LT. COL. JOHN A. SHEEDY, MC, USA
CAPTAIN JOHN B. COLLINS, MSC, USA

International Committee

CAPTAIN G. R. SARANIERO, MC, USN—
Chairman
LT. COLONEL V. HARRY ADROUNIE, USAF,
MSC
MAJOR RENE C. GARZA, MSC, USA
LT. COLONEL FERNANDO S. ROJO, MSC,
USA
COMMANDER MARY C. GRIMES, NC, USN

LT. COMMANDER E. B. QUADRINI, NC,
USN

MED. DIR. KARL HABEL, USPHS
LT. COMMANDER J. E. SZAKACS, MC, USN
CAPTAIN F. DOBRONTE, DC, USN
ARTHUR R. TURNER, M.D. (SGO-USA)
ARIS CARPOUSIS, M.D.

Reserve Officers Affairs

CAPTAIN DONALD J. O'BRIEN, MC, USN—
Chairman
BRIG. GEN. JAMES H. KIDDER, MC, USAR
COLONEL GEORGE M. LEIBY, USAF, MC

Publicity

CAPTAIN E. E. HEDBLUM, MC, USN—
Chairman
MAJOR BASIL W. DANO, MSC, USA
MR. IRVING GOLDBERG (USPHS)
MRS. MAUREEN GALLAGHER (SGO-USA)
MRS. RITA NELSON (VA)
MR. WILLIAM T. PARKER (SGO-USA)
MISS ADABELLE SMITH (SGO-USAF)
LT. COLONEL JOSEPH W. LYNCH, USAF
MISS AUDREY SCHNEIDER (SGO-USN)

Professional Activities

COLONEL DAN CROZIER, MC, USA—*Chairman*
COLONEL CONN MILBURN, MC, USA
LT. COLONEL RALPH B. ARNOLD, MSC,
USA
CAPTAIN WILLIAM L. ROSS, MC, USPHS
CAPTAIN WESLEY FRY, MC, USN

Transportation

LT. COMMANDER ROBERT E. RICKER, MSC,
USN—*Chairman*

Resolutions

BRIG. GEN. FRANK E. WILSON, MC, USAR
—*Chairman*

Nominating

BRIG. GEN. L. C. FAIRBANK, USA, Ret.—
Chairman

Sustaining Membership Committee

JOHN R. WOOD, M.D.—*Chairman*
MR. H. D. BECK
MR. L. M. COWSERT
DR. L. EUGENE DAILY

MR. ROBERT L. LEFEVRE
DR. LEONARD A. SCHEELE

Ladies Committee

MRS. RICHARD A. KERN—*Honorary Chairman*
MRS. EVAN STONE—*Chairman*
MRS. ROBERT E. BITNER
MRS. LEO GEHRIG

MRS. LOUIS S. HANSEN
MRS. WILLIAM J. KENNARD
MRS. BENJAMIN MILLER
MRS. HOWARD B. NELSON
MRS. ERIC POLLARD
MRS. H. E. RICHARDSON
MRS. RALPH ROSS
MRS. LARRY SMITH
MRS. F. W. TIMMERMAN

SYMPOSIUM

CURRENT TOPIC IN CARDIOVASCULAR MEDICINE

THURSDAY, NOVEMBER 3, 1960
MAYFLOWER HOTEL, WASHINGTON, D.C.

This symposium is sponsored by the D.C. GENERAL HOSPITAL in cooperation with Maryland, District of Columbia, and Virginia Academies of General Practice. All are welcome. AAGP credit will be given. (6 hours, Category I).

9:00 A.M. *Aminoxidase Inhibitors (Basic Pharmacology and Physiology)*
Alfred Fletscher, Basel, Switzerland

9:30 A.M. *Discussion*
Theodore Koppamyi and Bernard Brody, National Institutes of Health, Bethesda, Md.

9:45 A.M. *Aminoxidase Inhibitors (Clinical Aspects)*
Panel Moderator: Henry Russek, New York
Members: Frank Finnerty, Washington, D.C.
Andrew Frandosi, Washington, D.C.
Robert Oblath, North Hollywood, Calif.
Marvin Moser, White Plains, N.Y.

11:15 A.M. *Enzymes in Cardiology*
Panel Moderator: Howard Tickin, Washington, D.C.
Members: Felix Worblewski, New York, N.Y.
Warren E. Wacker, Boston, Mass.

2:00 P.M. *Hereditary Aspects*
Victor McKusick, Baltimore, Md.

2:45 P.M. *"Walking" EKG*
John S. La Due, New York, N.Y.

3:30 P.M. *Cardiac Arrhythmias*
Panel Moderator: John Evans, Washington, D.C.
Members: Robert Green, Cincinnati, Ohio
Proctor Harvey, Washington, D.C.
William Likoff, Philadelphia, Pa.
Robert Moe, Nutley, N.J.

NEW BOOKS

Books May Be Ordered Through The Association

Textbook of Surgical Pathology, 8th ed., C. F. W. Illingworth, M.D., F.R.C.S., and Bruce M. Dick, M.B., F.R.C.S., Little, Brown and Company, Boston. Price \$15.00.

Clinical Chemistry, 2nd ed., Joseph S. Annino, Clinical Chemist, Mass., Memorial Hospitals, Little, Brown and Company, Boston. Price \$8.00.

Progress in Psychotherapy, Vol. V. Review and Integrations, edited by Jules H. Masserman, M.D., and J. L. Moreno, M.D., Grune & Stratton, New York and London. Price \$8.50.

Plague Fighters, Herman Styler, Chilton Company, Philadelphia. Price \$3.50.

Deafness, John Chalmers Ballantyne, F.R.C.S., D.L.O., Little, Brown and Company, Boston. Price \$8.00.

Fractures, Dislocations & Sprains, Philip Wiles, M.S., F.R.C.S., F.A.C.S., Little, Brown and Company, Boston. Price \$7.50.

Pediatric Nursing, 4th ed., Gladys S. Benz, R.N.,

M.A., The C. V. Mosby Company, St. Louis. Price \$6.00.

Human Protozoology and Helminthology, A Synopsis, L. R. S. Macfarlane, O.B.E., M.D., M.A., D.P.H., Williams & Wilkins Co., Baltimore, exclusive U. S. agents. Price \$7.50.

French's Index of Differential Diagnosis, 8th ed., edited by Arthur H. Douthwaite, M.D., F.R.C.P., Williams & Wilkins Co., Baltimore, exclusive U. S. agents. Price \$24.00.

The Human Blood Proteins. Methods of Examination and their Clinical and Practical Significance, Prof. Ferdinand Wuhrmann, M.D., and Charlie Wunderly, Ph.D., translated by Harvey T. Adelson, M.D., Grune & Stratton, New York and London. Price \$15.75.

Physical Signs in Clinical Surgery, 13th ed., Hamilton Bailey, F.R.C.S., F.A.C.S., F.R.S.E., Williams & Wilkins Co., Baltimore, exclusive U. S. agents. Price \$14.50.



BOOK REVIEWS

THE THYROID-VITAMIN APPROACH TO CHOLESTEROL ATHEROMATOSIS AND CHRONIC DISEASE. A Ten-Year Study. By Murray Israel, M.D., Medical Director, Vascular Research Foundation. 132 pp. Vascular Research Foundation, New York.

This paper-back volume is a summary of the author's program of treatment of atheromatosis and some other chronic diseases over a period of 25 years. Very little space is devoted to the underlying theory (a disturbance in oxidative metabolism), the bulk of the book being made up of an explanation of the method of treatment and a discussion of results. In essence, the treatment consists of small doses of desiccated thyroid or thyroxin plus vitamins known to be involved in oxidative processes. In addition, choline, inositol and pyridoxine are used for their effects in mobilizing lipids from tissue depots.

Such an approach must be judged on the results of therapy rather than on the soundness of theory. It is in evaluating the results that the greatest weakness of this book lies. The author recognizes that any regimen must be judged by its influence on morbidity and mortality rather than by its effect on serum cholesterol levels. Nonetheless, the only objective criterion discussed in the book is the normalizing effect of treatment on the serum cholesterol. Mortality figures are given but it is impossible to compare them with "standard risk" statistics. In the 39 case reports listed, the disappearance or amelioration of symptoms is impressive and the enthusiasm of the author for his regimen is evident. For example, the statement is made that "A total of 655 patients (92 percent) were improved with respect to both subjective and objective criteria."

This book is definitely worth reading for any clinician who comes in contact with atherosclerotic disease. Despite the absence of adequate statistical data and any attempt at controls, the study should be familiar to all practitioners. This is a simple, acceptable regimen for the patient and apparently can do no harm; it is a regimen which has produced symptomatic improvement; it is certainly a regimen which requires further consideration, evaluation and controlled clinical trial.

JACQUES L. SHERMAN, JR., M.D. F.A.C.P.

METAL-BINDING IN MEDICINE. Proceedings of a Symposium Sponsored by Hahnemann Medical College and Hospital, Philadelphia. Edited by

Marvin J. Seven; L. Audrey Johnson, Associate Editor. 400 pp. J. B. Lippincott Company, Philadelphia and Montreal. Price \$13.75.

For a number of years there have been isolated references to chelation in a variety of clinical therapeutic problems, such as cardiac disease, heavy metal poisoning and removal of certain radioactive elements. This text is intended to gather together material which bears on the problem of chelation. The authors are to be congratulated on their success even though their text is actually a collection of individual papers presented at a symposium held in Philadelphia in May 1959.

One of the most popular subjects for the use of metal binding is the removal of radioactive strontium-90. To date outstanding success has not been achieved as the chelation agents utilized bind calcium much more avidly than strontium and thus limit their usefulness.

Of much more fundamental value is the material presented on the basic pharmacology and physiology of the chelation agents. Several intriguing uses are discussed, such as the virtually complete removal of specific elements to ascertain their role, as in blood coagulation. Finally, encouraging data on their use in lead and mercury poisoning, Wilson's disease (hepatolenticular degeneration) and cardiac disease are discussed.

This text is of value to all physicians who are called upon to manage the types of clinical problems presented and this would certainly include the general practitioner and the internist as well as physicians and biologists involved in research in these areas.

MAJOR MICHAEL P. DACQUISTO, MC, USA

CURRENT APPROACHES TO PSYCHOANALYSIS. Proceedings of the 48th Annual Meeting of the American Psychopathological Assoc. Edited by Paul H. Hoch, M.D., and Joseph Zubin, Ph.D. 207 pp. Grune & Stratton, New York and London. Price \$6.50.

This volume prints the 1958 proceedings of the American Psychopathological Association. The book presents a comprehensive review of the various psychoanalytic "schools." There are three parts to the book: theoretical approaches, clinical approaches, and evaluation studies.

The authors present the methodology of their own schools and discuss limitations to their own

and other's methods. Among the approaches considered are the current positions of the followers of Rado, Horney, Sullivan, the "Flower Hospital" group and Freud. There is much concern with the problem of validating theories and with the practical application of theories.

Dr. Leslie A. Hohman's presidential address is a statement of why he rejects psychoanalytic theory. This rejection he believes is based on scientific reflections rather than on emotional bias. It is an impressive argument. An equally stirring presentation is that of Dr. Bernard Glueck who telescopes fifty years of experience in psychiatry (in which he not only was a leading participant but also in which time he knew most of the world's leading psychiatrists). His distillate of practice is an enthusiastic endorsement of psychoanalysis for finding the good, creative, competent, happy life.

All of the papers are well written. The result is that a reader gains insight into the many approaches to psychoanalysis. This is an excellent book. It should be especially valuable to those attempting to decide about psychoanalytic careers, as well as to those who wish to know something of the scope of present day psychoanalysis.

CHESTER M. PIERCE, M.D.

SCIENCE AND PSYCHOANALYSIS. Vol. III. Publications Committee of the Academy of Psychoanalysis. Edited by Jules H. Masserman, M.D. 377 pp. Grune & Stratton, Inc., New York and London. Price \$11.00.

This book is a compendium of papers presented at the meetings of the Academy of Psychoanalysis in Philadelphia, April 1959, and a few presented in New York City in December 1958. There are forty-two contributors. The book is divided into six parts: "Surveys," "Theoretical and Philosophical Considerations," "Anthropologic and Sociologic Context," "Developmental Observations," "Clinical Studies," "Values in Therapy." The papers of each part are followed by a discussion by one or more contributors. Most of the papers are followed by references. The whole is well indexed, both for names as well as subjects.

Anyone interested in psychoanalytic technics will find this book well worth reading and a valuable addition to his library.

CDR. JAMES L. MCCARTNEY (MC) USNR, RET.

NAVAL LOGISTICS. By Vice Admiral George C. Dyer, USN (Ret.). Foreword by Admiral Robert B. Carney, USN (Ret.). 345 pp., illust. United States Naval Institute, Annapolis. Price \$5.00.

This book describes and presents the scope, meaning, and fundamentals of present day logistics as they apply to major Navy and/or joint military operations. The text confines itself primarily to the principles of logistics which constitute essential knowledge to the successful logistician, and provides background by revealing some of the more important milestones in logistics during the past sixty years. It clearly explains the influence of logistics on strategy and tactics.

The essentiality of proper logistic organization is stressed, including:

- (1) Procedures used in joint operations.
- (2) Effects of controls on the logistic system; e.g., National Security Organization and Single Manager System.

Under the Single Manager System within the Department of Defense, five of the systems are described, including the Military Medical Supply Agency.

This book should be required reading for all naval officers, including the staff corps who are aspiring to or who are assigned Navy Joint or Staff duty—logistic or otherwise.

Officers of other services will find the principles of logistics outlined in this text equally applicable to their services. The sections on amphibious and joint operations should be of special interest to them.

E. C. STONE, JR., M.D.

THE OFFICE ASSISTANT IN MEDICAL PRACTICE. 2nd Ed. By Portia M. Frederick and Carol Town-er. 407 pp., illust. W. B. Saunders Company, Philadelphia and London. Price \$5.25.

The physician who has an office assistant already trained is fortunate. But frequently it is necessary to employ an assistant whose qualifications are not fully known to him. So frequently he has little time to train her, and too late he finds that he has wasted time by employing her.

It is well that such a book as *The Office Assistant*, now in its second edition, has been written. Here is a work which can form the basis for running an efficient office. The miscellaneous duties for an office assistant in a doctor's office are numerous. There is the telephone to answer, the medical records to keep in order, the bookkeeping to do. Then there are the medico-legal aspects of a practice, the contacts with civic organizations which call upon the busy doctor.

All this is covered in *The Office Assistant*, an invaluable book for better operation of a doctor's office.

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